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# DESIGN OF A ROTOR INCORPORATING SPLITTER VANES FOR A HIGH PRESSURE RATIO SUPER-SONIC AXIAL COMPRESSOR STAGE

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| turbine engines | |
| turbomachinery | |

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This report describes a redesign of the rotor of a supersonic axial compressor stage. The original design operated with excessive deviation angles as incidence increased at part speed, and the compressor was never able to recover from this condition. The redesign incorporated "splitter vanes" consisting of reduced chord airfoils extending full span in the downstream half of each passage defined by the principal airfoils. A complete aerodynamic description of the stage is presented along with the detailed

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geometry of the new rotor, both on streamsurfaces and on manufacturing (Cartesian) planes.

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## PREFACE

This interim report was prepared by Dr. Arthur J. Wennerstrom and Capt George R. Frost of the Fluid Dynamics Facilities Research Laboratory, Aerospace Research Laboratories (AFSC), Wright-Patterson Air Force Base, Ohio. The work herein reported was accomplished between 1 November 1971 and 30 March 1972.

The report presents results from a portion of the effort of the Fluid Machinery Research Group supervised by Dr. Arthur J. Wennerstrom and was conducted under Work Unit 09 of Project 7065, "Aerospace Simulation Techniques Research," under the over-all direction of Mr. Elmer G. Johnson, Director.

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# SECTION I

## INTRODUCTION

The experimental performance of a high pressure ratio, single stage, supersonic axial-flow compressor designed for a stage total-pressure ratio of 3.0 was reported in Reference 1. The performance of this compressor was seriously deficient, and the greatest weakness of the design was concluded to be insufficient control of rotor deviation angles over the operating range. To gain better control of rotor outlet flow angles without simultaneously reducing throat area and causing significant increases in diffusion losses and weight, a partial blade termed a "splitter vane" was conceived. The objective of this configuration is to provide high solidity locally where there is appreciable camber combined with blade angles approaching axial, without introducing additional throat blockage or flow guidance in regions where it is unnecessary or detrimental. This basic design concept has been used on centrifugal impellers for years where similar conditions sometimes exist. However, the authors are unaware of any previously reported tests of such a configuration incorporated into an axial compressor or turbine.

The design of the original configuration without splitter vanes is presented in detail in Reference 2. The purpose of this report is to present information relevant to the redesign of the compressor rotor incorporating splitter vanes. This report is arranged in approximately the same format as Reference 2, and most data which were left unchanged are identified, but not presented again. Section II of this report identifies over-all design criteria, most of which were unmodified, and also discusses the philosophical choices defining splitter vane geometry. The aerodynamic calculation method is briefly reviewed in Section III, and one error discovered in the original design calculation is corrected. An intra-blade flow analysis through the rotor is presented in Section IV. Finally, Section V presents complete details of the revised geometry, including streamsurface and manufacturing-plane blade geometry.

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# SECTION II

## DESIGN CRITERIA

### 1. OVER-ALL CRITERIA

Nearly all of the design criteria discussed in Section II of Reference 2 were retained for this redesign. Since this redesign effects only the rotor, the remainder of the flowpath, including the stator, was geometrically unchanged. Also, since the original configuration operated so far from its design point, the data presented in Reference 1 did not appear to offer a sound basis for revising any of the original aerodynamic correlations related to losses, deviation angles, boundary-layer blockages, etc. Consequently, the design total pressure ratio and radial and axial distributions of losses, deviation, and boundary-layer blockage were identical to those of the original design. It was thereby assumed that the effect of adding splitter vanes to the rotor might be to make the original calculations and assumptions approximately correct. The rotor hub flowpath was redefined to offset the effect of splitter-vane metal blockage, while retaining the original leading- and trailing-edge radii. The polynomial camber line used in the original rotor design was employed again, but with one small change. The second derivative of the camber line at the trailing edge was reduced from 50 percent of its peak value, used originally, to 25 percent to reduce further the likelihood of excessive deviation angles. The number of principal blades on the rotor and the axial chord of these blades were identical to those of the original design. Consequently, rotor solidity, ignoring the splitter vanes, changed only slightly as a result of slight changes in camber line shape producing changes in true chord. The thickness distribution used was identical to the original design. Further details concerning the general properties of this camber line and thickness distribution are given in Reference 3.

### 2. SPLITTER-VANE CONCEPTUAL DEFINITION

In principal, it might be possible to do a credible job of optimizing splitter-vane geometry analytically by one of the time-dependent or finite element cascade analysis methods currently undergoing development. However, at the time of this design, between November 1971 and March 1972, neither the opportunity nor the time was available. Consequently, most of the decisions effecting splitter-vane geometry were made on the basis of engineering judgement. These decisions included determination of chord length, camber-line shape, incidence, circumferential spacing relative to the main blades, and thickness.

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Chord length was chosen according to the following considerations and assumptions:

    a.  The trailing edges of the splitter vanes should lie in the same plane as the trailing edges of the principal blades.

    b.  The leading edges should lie in a region of subsonic flow.

    c.  The leading edges should not be so close to the main passage shock as to have a significant influence on shock shape; a region of readjustment should exist between the splitter vane leading edge and the main passage shock.

    d.  The leading edges of the splitter vanes should lie sufficiently far forward in the passage as to offer good guidance to the flow in that region of the passage where the camber-line radius of curvature is a minimum.

These four points led to the decision to place the splitter-vane leading edge exactly half way, measured on the axial projection, between the leading and trailing-edge planes of the principal blades.

    Various reasons were postulated for setting the splitter vanes at positive incidence, and also at negative incidence. However, no convincing case could be made for favoring one direction with respect to the other, and the local flow direction in the passage could not be defined with sufficient certainty from data available. Consequently, the splitter-vane camber line was made identical to the principal blade camber line in the same region. This automatically fixed the incidence angle at some small, probably positive, value.

    The splitter vanes were circumferentially positioned exactly midway between principal blades. Because of unequal boundary-layer development on the suction and pressure surfaces of the principal blades, and probably some flow separation, this is not necessarily an optimum position. However, there was insufficient justification for picking any other location.

    The chordwise thickness distribution and the radial distribution of maximum thickness were both defined purely from stress considerations. A chordwise thickness distribution corresponding to a double-circular-arc section of equal camber was distributed symmetrically about the splitter-vane camber line. Maximum thickness varied from 8.0 percent (splitter) chord at the hub to 4.0 percent chord at the tip.

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A splitter-vane span other than full radial span was never contemplated. The high hub/tip radius ratio and low aspect ratio of the rotor made this structurally feasible. The high aerodynamic loading, peaking at the tip, made it aerodynamically desirable. Part-span shrouds were not required and were not used.

# SECTION III

## AERODYNAMIC CALCULATION METHOD

### 1. DETAILS UNCHANGED FROM THE ORIGINAL DESIGN

The basic approach used to determine the aerodynamic design of the modified rotor was unchanged from the original design presented in Reference 2. In brief, this consisted of calculating the axisymmetric flow field according to the "streamline curvature" method of analysis. The geometric parameters defining the rotor airfoils were specified, and an incidence distribution for the principal blades was assumed. Using the relative air angles entering and leaving the rotor determined from the original design (as a first approximation) and using the original distributions of deviation angle in the rotor trailing edge plane and of nondimensional internal deviation along streamsurfaces, the relative flow angles within the rotor were determined at each computing station, for each streamsurface. The equations of momentum, continuity, energy, and state were then solved simultaneously for the entire flow field, with relative flow angle within the rotor specified as the primary controlling variable.

The principal objective of the aerodynamic redesign was to determine the revised rotor hub flowpath which would compensate for the additional blade blockage caused by the splitter vanes and allow the original optimization criterion to be met. This criterion was a static pressure distribution along streamsurfaces within the rotor which rose smoothly with minimum slope over most of the airfoil and decreased to zero at the trailing edge, in deference to the "Kutta" condition. The parameters which were varied to achieve this objective were rotor hub flowpath coordinates and rotor incidence.

### 2. CORRECTION OF THE CONTINUITY EQUATION

The continuity equation used in the original design analysis lacked a term which took into account the effect of nonradial computing stations. This was Eq (10) of Reference 2. The effect of this was felt only in the stator since sloping stations were used only in the region downstream of the rotor trailing-edge plane and upstream of the stator trailing-edge plane. The corrected equation used in this redesign is

$$W = \int_{hub}^{case} C_m \cos\phi (1-\tan\phi \tan\alpha) w \, dA \qquad (1)$$

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where        W    is the flow rate
$C_m$   is the meridional velocity
$\phi$   is the streamsurface slope angle
$\alpha$   is the angle made by the computing station with the radial direction, positive values indicating an increase in radius with axial distance
w   is the specific weight
A   is the flow area normal to the axis.

The term $(1-\tan\phi\tan\alpha)$ was missing in the original expression. The magnitude of this error was approximately three percent. Consequently, since the original stator would be employed again with the redesigned rotor, the new rotor was designed for 29 lb/sec flow versus 30 lb/sec for the original.

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# SECTION IV

## RESULTS OF THE INTRA-BLADE FLOW ANALYSIS

The iterations performed in adjusting rotor incidence and hub flowpath coordinates ultimately led to somewhat better results than were achieved for the original design in terms of rotor incidence and static pressure distributions. The new incidence distribution for the rotor is compared with the original distribution in Figure 1. The meridional static pressure distributions at hub, mid, and casing are shown in Figure 2 for the redesigned configuration. The correction to the continuity equation and the reduction in design flow from 30 to 29 lb/sec were approximately self-compensating in the stator as the meridional static pressure distribution through the stator varied only slightly from the original. Because of the reduced flow, the new design total pressure ratio is 3.352 for the rotor and 3.056 for the stage with adiabatic efficiencies of 0.895 and 0.815, respectively. The computer printout of the final results achieved through this procedure is presented in the following pages.

GKF AXIAL COMPRESSOR PROGRAM RMH3
********************************

JOB TITLE =INTRA-BLADE FLOW ANALYSIS WITH RESEARCH ROTOR PLUS SPLITTER

NUMBER OF STATIONS = 17
NUMBER OF STREAMLINES = 15
NUMBER OF BLADING DATA RADII = 15
NUMBER OF INLET CONDITION DATA RADII = 1
IFSIMP = 1 (2 -S.7.E. .NE.2 -L.S.Q. STREAMLINES,NPOINT = IFSIMP+2)
MAXIMUM NUMBER OF PASSES PER CYCLE = 30
IFBL = 1 (1 -BLOCKAGE HELD AT DATA VALUES  2 -ANNULUS WALL R.L. CALCULATED)
ITER = 2 (1 -PRINT ALL VELOCITIES DURING ITERATIONS  2 -NORMAL OPTION)
NPLOT = 31 (FIRST PASS DURING WHICH CASCADE ANALYSIS IS PRINTED)
INCPO = 1 (INCREMENT FOR ABOVE)
NWRIT = 31 (FIRST PASS DURING WHICH VELOCITY TRIANGLE DATA IS PRINTED)
INCWRI = 1 (INCREMENT FOR ABOVE)
IFTYPE = 1 (0 -ALL STATIONS UPRIGHT,ALL SOLUTIONS SUBSONIC  1 -STATION LEAN ANGLES AND SOLUTION TYPES SPECIFIED)
CONTINUITY TOLERANCE = .0002
FRACTION OF INLET BLOCKAGE ON HUB = .5000
GAS CONSTANT = 53.3200
SPECIFIC HEAT = .24300
FIRST VISCOSITY COEFFICIENT =-0.
SECOND VISCOSITY COEFFICIENT =-0.

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STATION-TO-STATION CHANGES ARE PRESCRIBED THUS

STATION 2 FOLLOWS A BLADE FREE SPACE

STATION 3 FOLLOWS A BLADE FREE SPACE

STATION 4 FOLLOWS A BLADE FREE SPACE

STATION 5 FOLLOWS A BLADE DESCRIBED BY THE FOLLOWING AND ROTATING AT   20371.6 RPM

IBETA2 =1 IFTHIC =0 IFCAX =0 IFMACH =0 IFREYN =0 ILOSS =4 IFMLOS =0 IFLVSI =0 IFPROF =0 IFREYL =0

| RADIUS | RELATIVE FLOW ANGLE | ACTUAL/IDEAL RELATIVE PTOTAL | BLOCKAGE FRACTION |
|---|---|---|---|
| 6.9066 | -60.024 | .9918 | .12266 |
| 7.0443 | -60.500 | .9907 | .11467 |
| 7.1829 | -61.415 | .9897 | .10867 |
| 7.3217 | -61.331 | .9883 | .10394 |
| 7.4607 | -62.396 | .9869 | .09974 |
| 7.5999 | -62.537 | .9854 | .09617 |
| 7.7397 | -63.289 | .9838 | .09318 |
| 7.8799 | -63.765 | .9819 | .09050 |
| 8.0211 | -64.299 | .9799 | .08864 |
| 8.1640 | -64.343 | .9776 | .08630 |
| 8.3083 | -65.527 | .9751 | .08594 |
| 8.4564 | -66.235 | .9721 | .08555 |
| 8.6074 | -66.394 | .9684 | .08568 |
| 8.7623 | -67.771 | .9625 | .08615 |
| 8.9231 | -68.515 | .9527 | .09665 |

IANCMF(I) =  1

STATION 5 FOLLOWS A BLADE DESCRIBED BY THE FOLLOWING AND ROTATING AT   20371.6 RPM

IBETA2 =1 IFTHIC =0 IFCAX =0 IFMACH =0 IFCAX =0 IFMACH =0 IFREYN =0 ILOSS =4 IFMLOS =0 IFLVSI =0 IFPROF =0 IFREYL =0

| RADIUS | RELATIVE FLOW ANGLE | ACTUAL/IDEAL RELATIVE PTOTAL | BLOCKAGE FRACTION |
|---|---|---|---|
| 7.0871 | -54.396 | .9836 | .15165 |
| 7.2111 | -55.287 | .9815 | .14530 |
| 7.3352 | -56.030 | .9793 | .14018 |
| 7.4585 | -56.674 | .9766 | .13576 |
| 7.5820 | -57.260 | .9739 | .13194 |
| 7.7051 | -57.315 | .9707 | .12817 |
| 7.8282 | -58.171 | .9673 | .12504 |
| 7.9512 | -58.351 | .9637 | .12215 |
| 8.0743 | -59.580 | .9596 | .12036 |
| 8.1954 | -60.264 | .9550 | .11858 |
| 8.3253 | -51.013 | .9500 | .11771 |
| 8.4530 | -51.325 | .9442 | .11764 |
| 8.5835 | -62.594 | .9366 | .11622 |
| 8.7175 | -63.545 | .9248 | .11913 |
| 8.8562 | -64.440 | .9054 | .11984 |

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IANCHK(I) = ?

STATION * FOLLOWS A BLADE DESCRIBED BY THE FOLLOWING AND ROTATING AT 20371.4 RPM

IFTAR =1 IFTHIC =0 IFCIX =0 IFMACH =0 IFREYN =0 ILOSS =4 IFMLOS =0 IFLVSI =0 IFPROF =0 IFREYL =0

| RADIUS | RELATIVE FLOW ANGLE | ACTUAL/IDEAL RELATIVE PTOTAL | BLOCKAGE FRACTION |
|---|---|---|---|
| 7.2700 | -44.527 | .9766 | .20836 |
| 7.3759 | -45.421 | .9735 | .19645 |
| 7.4902 | -46.274 | .9701 | .18715 |
| 7.5345 | -47.076 | .9666 | .17884 |
| 7.6155 | -47.822 | .9514 | .17166 |
| 7.7025 | -48.554 | .9563 | .16513 |
| 7.7972 | -49.263 | .9516 | .15950 |
| 7.9023 | -49.921 | .9458 | .15419 |
| 8.0123 | -50.731 | .9397 | .15015 |
| 8.2157 | -51.536 | .9318 | .14656 |
| 8.3265 | -52.441 | .9252 | .14416 |
| 8.4555 | -53.519 | .9163 | .14275 |
| 8.5832 | -54.257 | .9047 | .14233 |
| 8.9657 | -55.305 | .8873 | .14225 |
| 8.7434 | -56.282 | .8561 | .14220 |

IANCHK(I) = ?

STATION * FOLLOWS A BLADE DESCRIBED BY THE FOLLOWING AND ROTATING AT 20371.4 RPM

IFTAR =1 IFTHIC =0 IFCIX =0 IFMACH =0 IFREYN =0 ILOSS =4 IFMLOS =0 IFLVSI =0 IFPROF =0 IFREYL =0

| RADIUS | RELATIVE FLOW ANGLE | ACTUAL/IDEAL RELATIVE PTOTAL | BLOCKAGE FRACTION |
|---|---|---|---|
| 7.4500 | -31.823 | .9681 | .16500 |
| 7.5231 | -32.143 | .9644 | .15501 |
| 7.7033 | -33.034 | .9593 | .14566 |
| 7.8337 | -34.724 | .9544 | .13967 |
| 7.7734 | -35.147 | .9435 | .13377 |
| 7.9557 | -35.385 | .9421 | .12953 |
| 7.7455 | -36.742 | .9352 | .12331 |
| 8.0340 | -37.342 | .9274 | .11927 |
| 8.1245 | -38.315 | .9190 | .11547 |
| 8.2157 | -39.034 | .9097 | .11220 |
| 8.5111 | -39.991 | .8994 | .10930 |
| 8.4163 | -40.571 | .8875 | .10802 |
| 8.5071 | -41.644 | .8723 | .10609 |
| 8.6204 | -42.264 | .8491 | .10601 |
| 8.7225 | -43.006 | .8109 | .10507 |

IANCHK(I) = 4

STATION * FOLLOWS A BLADE DESCRIBED BY THE FOLLOWING AND ROTATING AT 20371.4 RPM

IFTAR =1 IFTHIC =0 IFCIX =0 IFMACH =0 IFREYN =0 ILOSS =4 IFMLOS =0 IFLVSI =0 IFPROF =0 IFREYL =0

| RADIUS | RELATIVE FLOW ANGLE | ACTUAL/IDEAL RELATIVE PTOTAL | BLOCKAGE FRACTION |
|--------|--------|--------|--------|
| 7.5585 | -25.612 | .9591 | .04437 |
| 7.6197 | -26.841 | .9536 | .04309 |
| 7.6539 | -25.392 | .9477 | .04115 |
| 7.7608 | -23.314 | .9409 | .04100 |
| 7.8284 | -30.461 | .9336 | .04024 |
| 7.8326 | -31.468 | .9257 | .03956 |
| 7.9574 | -42.443 | .9171 | .03882 |
| 8.0442 | -33.158 | .9074 | .03806 |
| 8.1233 | -33.056 | .8972 | .03752 |
| 8.2047 | -34.467 | .8859 | .03690 |
| 8.2912 | -34.371 | .8732 | .03538 |
| 8.3739 | -35.358 | .8584 | .03534 |
| 8.4623 | -35.527 | .8392 | .03545 |
| 8.5544 | -35.775 | .8105 | .03496 |
| 8.6556 | -35.791 | .7636 | .03437 |

IANCHR(ID) = 5

STATION 10 FOLLOWS A BLADE FREE SPACE

IBCHR(ID) = 6

| RADIUS | 'Z' |
|--------|-----|
| 7.5000 | 2.2250 |
| 7.8000 | 2.2350 |
| 8.0000 | 2.2450 |
| 8.2000 | 2.4080 |
| 8.4000 | 2.3500 |
| 8.6000 | 2.2250 |

STATION 11 FOLLOWS A BLADE FREE SPACE

IBCHR(ID) = 15

| RADIUS | 'Z' |
|--------|-----|
| 7.5272 | 2.5129 |
| 7.6365 | 2.6117 |
| 7.7472 | 2.6390 |
| 7.8033 | 2.7762 |
| 7.4730 | 2.6492 |
| 7.8391 | 2.8304 |
| 8.0343 | 2.3262 |
| 8.0733 | 2.3460 |
| 8.1427 | 2.9491 |
| 8.2142 | 2.9343 |
| 8.2473 | 2.5475 |
| 8.3624 | 2.5442 |
| 8.4431 | 2.7555 |
| 8.5220 | 2.6591 |
| 8.6114 | 2.5153 |

STATION 12 FOLLOWS A BLADE DESCRIBED BY THE FOLLOWING AND ROTATING AT     0.0 RPM

IBETA2 =1 IFTHIC =0 IFGAX =0 IFMACH =0 IFREYN =0 ILOSS =4 IFALOS =0 IFLVSI =0 IFPROF =0 IFREYL =0

11

| RADIUS | RELATIVE FLOW ANGLE | ACTUAL/IDEAL RELATIVE PTOTAL | BLOCKAGE FRACTION |
|---|---|---|---|
| 7.7326 | 30.347 | .9692 | .09244 |
| 7.7890 | 30.775 | .9710 | .08751 |
| 7.8435 | 30.703 | .9723 | .08310 |
| 7.8932 | 30.667 | .9732 | .07929 |
| 7.9556 | 30.700 | .9743 | .07606 |
| 8.0127 | 30.719 | .9753 | .07341 |
| 8.0756 | 30.763 | .9765 | .07140 |
| 8.1290 | 30.850 | .9776 | .07007 |
| 8.1860 | 30.951 | .9785 | .06945 |
| 8.2477 | 31.113 | .9795 | .06950 |
| 8.3073 | 31.313 | .9805 | .07060 |
| 8.3608 | 31.620 | .9814 | .07257 |
| 8.4309 | 32.121 | .9823 | .07579 |
| 8.4355 | 33.153 | .9827 | .08106 |
| 8.5638 | 34.175 | .9828 | .08811 |

IANCHR(I) = 1

IREND(I) = 15

| RADIUS | 'Z' |
|---|---|
| 7.7325 | 3.0659 |
| 7.7890 | 3.1401 |
| 7.8435 | 3.2061 |
| 7.8932 | 3.2634 |
| 7.9555 | 3.3114 |
| 8.0127 | 3.3491 |
| 8.0705 | 3.3752 |
| 8.1290 | 3.3908 |
| 8.1860 | 3.3931 |
| 8.2477 | 3.3818 |
| 8.3073 | 3.3560 |
| 8.3608 | 3.3144 |
| 8.4309 | 3.2554 |
| 8.4355 | 3.1756 |
| 8.5533 | 3.0673 |

STATION 13 FOLLOWS A BLADE DESCRIBED BY THE FOLLOWING AND ROTATING AT     0.0 RPM

IFChA2 =1 IFIMIC =0 IFCBX =0 IFMACH =0 IFREYN =0 ILOSS =4 IFMLOS =0 IFLVSI =0 IFPROF =0 IFREYL =0

| RADIUS | RELATIVE FLOW ANGLE | ACTUAL/IDEAL RELATIVE PTOTAL | BLOCKAGE FRACTION |
|---|---|---|---|
| 7.7467 | 17.994 | .9384 | .09796 |
| 7.7971 | 17.991 | .9418 | .09232 |
| 7.8495 | 17.794 | .9443 | .08819 |
| 7.9039 | 17.724 | .9462 | .08425 |
| 7.9502 | 17.677 | .9481 | .08069 |
| 8.0153 | 17.539 | .9504 | .07786 |
| 8.0778 | 17.527 | .9528 | .07570 |
| 8.2332 | 17.643 | .9550 | .07425 |
| 8.1933 | 17.596 | .9569 | .07354 |
| 8.2503 | 17.754 | .9589 | .07353 |
| 8.3226 | 17.982 | .9609 | .07455 |

```
4.3142    18.068              .9630    .07640
8.4457    18.355              .9647    .07929
2.5073    19.342              .9655    .08359
9.5592    19.528              .9656    .05968
```

IANGHR(I) = 2

IFEVOID(I) = 15

```
RADIUS    'Z'
7.7467    3.6189
7.7971    3.6684
7.3495    3.7124
7.9039    3.7506
7.9602    3.7826
9.0163    3.8077
8.0773    3.8255
8.1392    3.8355
8.1393    3.6370
8.2609    3.8295
9.3225    3.8123
9.3342    3.7846
9.4457    3.7453
9.5073    3.7921
9.5592    3.5202
```

STATION 14 FOLLOWS A BLADE DESCRIBED BY THE FOLLOWING AND ROTATING AT    0.0 RPM

IBETAP =1 IFTHIC =0 IFCAX =0 IFMACH =0 IFREYN =0 ILOSS =4 ICMLOS =0 IFLVSI =0 IFPROF =0 IFREYL =0

| RADIUS | RELATIVE FLOW ANGLE | ACTUAL/IDEAL RELATIVE PTOTAL | BLOCKAGE FRACTION |
|---|---|---|---|
| 7.7077 | 6.449 | .9077 | .06945 |
| 7.7662 | 6.327 | .9128 | .06533 |
| 7.4256 | 6.210 | .9165 | .06277 |
| 7.3353 | 6.106 | .9194 | .06000 |
| 7.9432 | 5.115 | .9223 | .05763 |
| 3.0112 | 5.038 | .9256 | .05549 |
| 4.3734 | 5.380 | .9292 | .05419 |
| 8.1397 | 5.945 | .9324 | .05317 |
| 6.2025 | 5.138 | .9355 | .05205 |
| 9.2605 | 5.540 | .9384 | .05235 |
| 8.3302 | 5.313 | .9415 | .05319 |
| 9.3733 | 6.305 | .9447 | .05431 |
| 9.4550 | 6.147 | .9472 | .05606 |
| 9.5131 | 6.378 | .9482 | .05852 |
| 8.5737 | 6.636 | .9484 | .06196 |

IANGHR(I) = 3

IFEVOID(I) = 15

```
RADIUS   'Z'
7.7077   4.1720
7.7662   4.1967
7.4256   4.2167
```

```
7.9963   4.2379
7.7482   4.2539
7.7112   4.2664
7.745    4.2753
8.397    4.2803
8.2026   4.2811
8.2655   4.2773
8.3302   4.2697
8.3933   4.2548
8.4569   4.2351
8.5191   4.2085
8.5797   4.0726
```

STATION 15 FOLLOWS A BLADE DESCRIBED BY THE FOLLOWING AND ROTATING AT     0.0 RPM

IBETA2 =1 IFTHIC =0 IFCEX =0 IFMACH =0 IFREYN =0 ILOSS =0 IFMLOS =4 IFMLOS =0 IFLVSI =0 IFPROF =0 IFREYL =0

| RADIUS | RELATIVE FLOW ANGLE | ACTUAL/IDEAL RELATIVE PTOTAL | BLOCKAGE FRACTION |
|---|---|---|---|
| 7.5419 | 0.000 | .8767 | .00959 |
| 7.7420 | 0.000 | .8837 | .00952 |
| 7.8133 | 0.000 | .8888 | .00945 |
| 7.8766 | -0.000 | .8926 | .00938 |
| 7.9445 | 0.000 | .8966 | .00931 |
| 8.0105 | -0.000 | .9011 | .00924 |
| 8.0767 | 0.000 | .9057 | .00918 |
| 8.1425 | 0.000 | .9100 | .00911 |
| 8.2053 | 0.000 | .9141 | .00904 |
| 8.2732 | 0.000 | .9180 | .00897 |
| 8.3379 | 0.000 | .9221 | .00890 |
| 8.4017 | -0.000 | .9263 | .00883 |
| 8.4543 | -0.000 | .9296 | .00876 |
| 8.5274 | 0.000 | .9310 | .00870 |
| 8.5891 | -0.000 | .9312 | .00864 |

IANCHP(I) = 4

STATION 15 FOLLOWS A BLADE FREE SPACE

STATION 17 FOLLOWS A BLADE FREE SPACE

14

ANNULUS GEOMETRY SPECIFICATION AND SOLUTION TYPE INDICATORS

| STATION NUMBER | AXIAL LOCATION | HUB RADIUS | CASING RADIUS | LEAN ANGLE | BLOCK AGE | IMACHI (0-SUBSONIC 1-SUPERSONIC) |
|---|---|---|---|---|---|---|
| 1 | -1.0000 | 6.0596 | 9.0900 | 0.000 | 0.0000 | 0 |
| 2 | -1.0000 | 6.3746 | 9.0900 | -0.000 | -0.0000 | 0 |
| 3 | -.4000 | 6.6016 | 9.0500 | -0.000 | -0.0000 | 0 |
| 4 | 0.0000 | 6.7506 | 8.9900 | -0.000 | -0.0000 | 0 |
| 5 | .4000 | 6.9065 | 8.9231 | -0.000 | -0.0000 | 1 |
| 6 | .8000 | 7.0471 | 8.8562 | -0.000 | -0.0000 | 0 |
| 7 | 1.2000 | 7.2700 | 8.7894 | -0.000 | -0.0000 | 0 |
| 8 | 1.6000 | 7.4500 | 8.7225 | -0.000 | -0.0000 | 0 |
| 9 | 2.0000 | 7.5525 | 8.6556 | -0.000 | 0.0000 | 0 |
| 10 | 2.2000 | 7.5940 | 8.6279 | -0.000 | 0.0000 | 0 |
| 11 | 2.5000 | 7.6272 | 8.6114 | -0.000 | -0.0000 | 0 |
| 12 | 3.1000 | 7.7326 | 8.5635 | -0.000 | -0.0000 | 0 |
| 13 | 3.7000 | 7.7467 | 8.5692 | -0.000 | -0.0300 | 0 |
| 14 | 4.2000 | 7.7377 | 8.5797 | -0.000 | -0.0000 | 0 |
| 15 | 4.7250 | 7.6819 | 8.5891 | -0.000 | -0.0000 | 0 |
| 16 | 5.4000 | 7.6819 | 8.5891 | -0.000 | -0.0000 | 0 |
| 17 | 7.0000 | 7.6920 | 8.5890 | -0.000 | -0.0000 | 0 |

FLOW = 29.00
FRACTIONS OF INLET BETWEEN HUB AND EACH STREAMLINE:

| 0.0000 | .0724 | .1429 | .2143 | .2857 | .3571 | .4286 | .5000 | .5714 |
|---|---|---|---|---|---|---|---|---|
| .6429 | .7143 | .7857 | .3571 | .9285 | 1.0000 | | | |

INLET CONDITIONS

| RADIUS | TOTAL TEMPERATURE | TOTAL PRESSURE | FLOW ANGLE |
|---|---|---|---|
| 1.0000 | 518.70 | 2116.0 | 0.00 |

15

## STATION 1

### GENERAL FLOW PARAMETERS

| LOCA TION | RADIUS | VELOCITIES ABSOLUTE | MERIDNL | TANGENTL | TEMPERATURES TOTAL | STATIC | PRESSURES TOTAL | STATIC | MACH NUMBER | WHIRL ANGLE | SLOPE ANGLE | RAD.OF CURVTRE. | STATIC DENSITY | LOCA TION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6.0646 | 414.030 | 414.030 | 0.000 | 518.7 | 504.4 | 2116.00 | 1919.11 | .3762 | 0.000 | 20.932 | 0.00 | .0714 | 1 |
| 2 | 6.2943 | 414.030 | 414.030 | 0.000 | 518.7 | 504.4 | 2116.00 | 1919.11 | .3762 | 0.000 | 19.292 | 0.00 | .0714 | 2 |
| 3 | 6.5004 | 414.030 | 414.030 | 0.000 | 518.7 | 504.4 | 2116.00 | 1919.11 | .3762 | 0.000 | 17.609 | 0.00 | .0714 | 3 |
| 4 | 6.7161 | 414.030 | 414.030 | 0.000 | 518.7 | 504.4 | 2116.00 | 1919.11 | .3762 | 0.000 | 15.897 | 0.00 | .0714 | 4 |
| 5 | 6.9318 | 414.030 | 414.030 | 0.000 | 518.7 | 504.4 | 2116.00 | 1919.11 | .3762 | 0.000 | 14.166 | 0.00 | .0714 | 5 |
| 6 | 7.1475 | 414.030 | 414.030 | 0.000 | 518.7 | 504.4 | 2116.00 | 1919.11 | .3762 | 0.000 | 12.430 | 0.00 | .0714 | 6 |
| 7 | 7.3636 | 414.030 | 414.030 | 0.000 | 518.7 | 504.4 | 2116.00 | 1919.11 | .3762 | 0.000 | 10.703 | 0.00 | .0714 | 7 |
| 8 | 7.5793 | 414.030 | 414.030 | 0.000 | 518.7 | 504.4 | 2116.00 | 1919.11 | .3762 | 0.000 | 9.009 | 0.00 | .0714 | 8 |
| 9 | 7.7950 | 414.030 | 414.030 | 0.000 | 518.7 | 504.4 | 2116.00 | 1919.11 | .3762 | 0.000 | 7.366 | 0.00 | .0714 | 9 |
| 10 | 8.0111 | 414.030 | 414.030 | 0.000 | 518.7 | 504.4 | 2116.00 | 1919.11 | .3762 | 0.000 | 5.794 | 0.00 | .0714 | 10 |
| 11 | 8.2259 | 414.030 | 414.030 | 0.000 | 518.7 | 504.4 | 2116.00 | 1919.11 | .3762 | 0.000 | 4.322 | 0.00 | .0714 | 11 |
| 12 | 8.4425 | 414.030 | 414.030 | 0.000 | 518.7 | 504.4 | 2115.00 | 1919.11 | .3762 | 0.000 | 2.975 | 0.00 | .0714 | 12 |
| 13 | 8.6552 | 414.030 | 414.030 | 0.000 | 518.7 | 504.4 | 2116.00 | 1919.11 | .3762 | 0.000 | 1.785 | 0.00 | .0714 | 13 |
| 14 | 8.8743 | 414.030 | 414.030 | 0.000 | 518.7 | 504.4 | 2116.00 | 1919.11 | .3762 | 0.000 | .782 | 0.00 | .0714 | 14 |
| 15 | 9.0900 | 414.030 | 414.030 | 0.000 | 518.7 | 504.4 | 2116.00 | 1919.11 | .3762 | 0.000 | 0.000 | 0.00 | .0714 | 15 |

## STATION 2

### GENERAL FLOW PARAMETERS

| LOCA TION | RADIUS | VELOCITIES ABSOLUTE | MERIDNL | TANGENTL | TEMPERATURES TOTAL | STATIC | PRESSURES TOTAL | STATIC | MACH NUMBER | WHIRL ANGLE | SLOPE ANGLE | RAD.OF CURVTRE. | STATIC DENSITY | LOCA TION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6.3745 | 453.456 | 453.456 | 0.000 | 518.7 | 501.6 | 2116.00 | 1881.45 | .4132 | 0.000 | 20.813 | -205.70 | .0703 | 1 |
| 2 | 6.5644 | 456.899 | 453.393 | 0.000 | 518.7 | 501.3 | 2116.00 | 1878.02 | .4164 | 0.000 | 19.092 | -121.46 | .0703 | 2 |
| 3 | 6.7543 | 459.999 | 459.999 | 0.000 | 518.7 | 501.1 | 2116.00 | 1874.92 | .4194 | 0.000 | 17.315 | -81.63 | .0702 | 3 |
| 4 | 6.9440 | 462.585 | 462.535 | 0.000 | 518.7 | 500.9 | 2116.00 | 1872.32 | .4218 | 0.000 | 15.510 | -61.44 | .0701 | 4 |
| 5 | 7.1338 | 464.563 | 454.565 | 0.000 | 518.7 | 500.7 | 2116.00 | 1870.32 | .4237 | 0.000 | 13.692 | -49.72 | .0701 | 5 |
| 6 | 7.3239 | 465.382 | 465.392 | 0.000 | 518.7 | 500.6 | 2116.00 | 1868.99 | .4249 | 0.000 | 11.873 | -41.98 | .0700 | 6 |
| 7 | 7.5143 | 466.368 | 456.463 | 0.000 | 518.7 | 500.6 | 2116.00 | 1865.39 | .4255 | 0.000 | 10.062 | -36.21 | .0700 | 7 |
| 8 | 7.7062 | 466.255 | 456.256 | 0.000 | 518.7 | 500.5 | 2115.00 | 1865.61 | .4253 | 0.000 | 8.275 | -31.47 | .0700 | 8 |
| 9 | 7.8984 | 465.169 | 455.169 | 0.000 | 518.7 | 500.7 | 2116.00 | 1869.71 | .4242 | 0.000 | 6.523 | -27.30 | .0700 | 9 |
| 10 | 8.0322 | 463.113 | 463.113 | 0.000 | 518.7 | 500.8 | 2116.00 | 1871.79 | .4223 | 0.000 | 4.818 | -23.52 | .0701 | 10 |
| 11 | 9.2872 | 459.994 | 459.994 | 0.000 | 518.7 | 501.1 | 2116.00 | 1874.93 | .4193 | 0.000 | 3.182 | -20.09 | .0702 | 11 |
| 12 | 9.4840 | 455.705 | 455.705 | 0.000 | 518.7 | 501.4 | 2116.00 | 1879.21 | .4153 | 0.000 | 1.633 | -17.05 | .0703 | 12 |
| 13 | 8.6831 | 450.148 | 450.148 | 0.000 | 518.7 | 501.8 | 2115.00 | 1884.72 | .4101 | 0.000 | .195 | -14.41 | .0704 | 13 |
| 14 | 9.8852 | 443.237 | 443.237 | 0.000 | 518.7 | 502.3 | 2116.00 | 1891.48 | .4036 | 0.000 | -1.095 | -12.21 | .0706 | 14 |
| 15 | 9.0900 | 435.165 | 435.165 | 0.000 | 518.7 | 502.9 | 2116.00 | 1899.23 | .3960 | 0.000 | 0.000 | -10.50 | .0708 | 15 |

STATION 3
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## GENERAL FLOW PARAMETERS

| LOCA TION | RADIUS | VELOCITIES ABSOLUTE | VELOCITIES MERIDNL. | VELOCITIES TANGENTL. | TEMPERATURES TOTAL | TEMPERATURES STATIC | PRESSURES TOTAL | PRESSURES STATIC | MACH NUMBER | WHIRL ANGLE | SLOPE ANGLE | RAD.OF CURVTRE. | STATIC DENSITY | LOCA TION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6.6016 | 581.903 | 501.903 | 0.000 | 518.7 | 497.7 | 2116.00 | 1831.34 | .4591 | 0.000 | 21.148 | 43.51 | .0698 | 1 |
| 2 | 6.7703 | 589.403 | 503.403 | 0.000 | 518.7 | 497.1 | 2116.00 | 1823.22 | .4662 | 0.000 | 19.024 | 218.05 | .0688 | 2 |
| 3 | 6.9338 | 515.043 | 515.043 | 0.000 | 518.7 | 496.6 | 2116.00 | 1817.05 | .4716 | 0.000 | 16.976 | -153.22 | .0686 | 3 |
| 4 | 7.1072 | 519.329 | 519.329 | 0.000 | 518.7 | 495.3 | 2116.00 | 1812.33 | .4757 | 0.000 | 14.979 | -73.92 | .0685 | 4 |
| 5 | 7.2760 | 522.539 | 522.539 | 0.000 | 518.7 | 495.0 | 2116.00 | 1806.77 | .4788 | 0.000 | 13.006 | -53.43 | .0684 | 5 |
| 6 | 7.4455 | 524.743 | 524.743 | 0.000 | 518.7 | 495.8 | 2116.00 | 1806.32 | .4809 | 0.000 | 11.042 | -42.37 | .0683 | 6 |
| 7 | 7.6161 | 525.906 | 525.906 | 0.000 | 518.7 | 495.7 | 2116.00 | 1805.02 | .4820 | 0.000 | 9.073 | -34.34 | .0683 | 7 |
| 8 | 7.7875 | 525.800 | 525.800 | 0.000 | 518.7 | 495.7 | 2116.00 | 1805.05 | .4820 | 0.000 | 7.104 | -27.96 | .0683 | 8 |
| 9 | 7.9503 | 524.505 | 524.505 | 0.000 | 518.7 | 495.8 | 2116.00 | 1806.59 | .4807 | 0.000 | 5.134 | -22.82 | .0683 | 9 |
| 10 | 9.1350 | 521.598 | 521.598 | 0.000 | 518.7 | 495.1 | 2116.00 | 1809.82 | .4779 | 0.000 | 3.165 | -18.70 | .0684 | 10 |
| 11 | 5.3116 | 516.982 | 516.982 | 0.000 | 518.7 | 496.5 | 2116.00 | 1814.92 | .4735 | 0.000 | 1.208 | -15.38 | .0686 | 11 |
| 12 | 8.4906 | 510.443 | 510.443 | 0.000 | 518.7 | 497.0 | 2116.00 | 1822.09 | .4672 | 0.000 | -.736 | -12.63 | .0688 | 12 |
| 13 | 8.6727 | 501.579 | 501.679 | 0.000 | 518.7 | 497.8 | 2116.00 | 1831.58 | .4583 | 0.000 | -2.674 | -10.26 | .0690 | 13 |
| 14 | 8.8589 | 490.144 | 490.144 | 0.000 | 518.7 | 498.7 | 2116.00 | 1843.88 | .4479 | 0.000 | -4.632 | -8.11 | .0693 | 14 |
| 15 | 9.0530 | 474.855 | 474.855 | 0.000 | 518.7 | 499.9 | 2116.00 | 1859.83 | .4334 | 0.000 | -6.654 | -6.12 | .0698 | 15 |

STATION 4
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## GENERAL FLOW PARAMETERS

| LOCA TION | RADIUS | VELOCITIES ABSOLUTE | VELOCITIES MERIDNL. | VELOCITIES TANGENTL. | TEMPERATURES TOTAL | TEMPERATURES STATIC | PRESSURES TOTAL | PRESSURES STATIC | MACH NUMBER | WHIRL ANGLE | SLOPE ANGLE | RAD.OF CURVTRE. | STATIC DENSITY | LOCA TION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6.7586 | 572.416 | 572.416 | 0.000 | 518.7 | 491.4 | 2116.00 | 1751.39 | .5269 | 0.000 | 20.869 | -21.79 | .0666 | 1 |
| 2 | 6.9036 | 572.955 | 572.955 | 0.000 | 518.7 | 491.4 | 2116.00 | 1750.74 | .5275 | 0.000 | 18.893 | -64.77 | .0658 | 2 |
| 3 | 7.0604 | 575.005 | 575.005 | 0.000 | 518.7 | 491.2 | 2116.00 | 1745.30 | .5295 | 0.000 | 16.938 | 301.84 | .0668 | 3 |
| 4 | 7.2131 | 577.946 | 577.946 | 0.000 | 518.7 | 490.9 | 2116.00 | 1744.79 | .5323 | 0.000 | 14.969 | 79.15 | .0667 | 4 |
| 5 | 7.3658 | 581.179 | 581.179 | 0.000 | 518.7 | 490.5 | 2116.00 | 1740.91 | .5355 | 0.000 | 12.956 | 69.37 | .0566 | 5 |
| 6 | 7.5216 | 584.140 | 584.140 | 0.000 | 518.7 | 490.3 | 2116.00 | 1737.34 | .5383 | 0.000 | 10.845 | 98.88 | .0665 | 6 |
| 7 | 7.6776 | 586.322 | 586.322 | 0.000 | 518.7 | 490.1 | 2116.00 | 1734.71 | .5405 | 0.000 | 8.751 | 780.04 | .0664 | 7 |
| 8 | 7.8345 | 587.266 | 587.256 | 0.000 | 518.7 | 490.0 | 2116.00 | 1733.56 | .5414 | 0.000 | 6.563 | -89.35 | .0664 | 8 |
| 9 | 7.9927 | 586.616 | 586.616 | 0.000 | 518.7 | 490.1 | 2116.00 | 1734.35 | .5403 | 0.000 | 4.333 | -38.63 | .0664 | 9 |
| 10 | 8.1529 | 584.129 | 584.129 | 0.000 | 518.7 | 490.3 | 2116.00 | 1737.35 | .5393 | 0.000 | 2.076 | -24.11 | .0665 | 10 |
| 11 | 8.3143 | 579.722 | 579.722 | 0.000 | 518.7 | 490.7 | 2116.00 | 1742.66 | .5340 | 0.000 | -.183 | -17.73 | .0666 | 11 |
| 12 | 8.4731 | 573.512 | 573.512 | 0.000 | 518.7 | 491.3 | 2116.00 | 1750.08 | .5280 | 0.000 | -2.425 | -14.67 | .0668 | 12 |
| 13 | 8.6462 | 565.912 | 565.912 | 0.000 | 518.7 | 492.0 | 2116.00 | 1759.03 | .5206 | 0.000 | -4.636 | -13.62 | .0670 | 13 |
| 14 | 8.8166 | 557.715 | 557.715 | 0.000 | 518.7 | 492.8 | 2116.00 | 1765.70 | .5127 | 0.000 | -6.823 | -14.88 | .0673 | 14 |
| 15 | 8.9900 | 550.290 | 550.238 | 0.000 | 518.7 | 493.5 | 2116.00 | 1777.31 | .5055 | 0.000 | -9.013 | -24.07 | .0675 | 15 |

STATION 5
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## GENERAL FLOW PARAMETERS

| LOCA TION | RADIUS | VELOCITIES ABSOLUTE | VELOCITIES MERIDNL. | VELOCITIES TANG.NTL. | TEMPERATURES TOTAL | TEMPERATURES STATIC | PRESSURES TOTAL | PRESSURES STATIC | MACH NUMBER | WHIRL ANGLE | SLOPE ANGLE | RAD.OF CURVTRE. | STATIC DENSITY | LOCA TION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6.9005 | 515.316 | 505.210 | 265.234 | 572.9 | 541.4 | 2972.57 | 2438.35 | .5397 | 25.535 | 22.324 | 6.22 | .0845 | 1 |
| 2 | 7.0441 | 512.815 | 505.517 | 256.574 | 572.2 | 540.9 | 2956.03 | 2428.24 | .5377 | 24.752 | 20.632 | 6.44 | .0842 | 2 |
| 3 | 7.1925 | 512.340 | 505.357 | 243.235 | 571.7 | 540.4 | 2944.11 | 2417.73 | .5361 | 23.999 | 18.898 | 6.69 | .0839 | 3 |
| 4 | 7.3212 | 514.582 | 504.419 | 243.191 | 571.4 | 540.0 | 2934.53 | 2407.04 | .5397 | 23.310 | 16.864 | 6.94 | .0836 | 4 |
| 5 | 7.4501 | 515.892 | 503.337 | 237.505 | 571.1 | 539.5 | 2925.71 | 2395.97 | .5420 | 22.644 | 14.803 | 7.14 | .0833 | 5 |
| 6 | 7.5934 | 519.313 | 574.214 | 232.021 | 570.3 | 539.0 | 2916.73 | 2384.47 | .5444 | 22.002 | 12.632 | 7.28 | .0830 | 6 |
| 7 | 7.7336 | 521.185 | 573.471 | 226.356 | 570.0 | 534.4 | 2905.99 | 2372.43 | .5463 | 21.371 | 10.358 | 7.38 | .0826 | 7 |
| 8 | 7.8795 | 522.043 | 581.055 | 221.493 | 570.1 | 537.9 | 2892.71 | 2359.85 | .5473 | 20.761 | 7.995 | 7.48 | .0823 | 8 |
| 9 | 8.0205 | 521.360 | 545.330 | 214.045 | 563.5 | 537.4 | 2876.04 | 2346.81 | .5470 | 20.150 | 5.556 | 7.64 | .0819 | 9 |
| 10 | 8.1647 | 519.011 | 515.337 | 207.183 | 568.3 | 536.9 | 2856.08 | 2333.57 | .5452 | 19.555 | 3.053 | 7.97 | .0815 | 10 |
| 11 | 8.3090 | 514.744 | 501.324 | 199.932 | 567.9 | 535.4 | 2833.15 | 2320.70 | .5417 | 18.979 | .505 | 8.66 | .0811 | 11 |
| 12 | 8.4530 | 508.431 | 477.125 | 192.640 | 566.9 | 535.1 | 2808.02 | 2309.00 | .5362 | 18.459 | -2.066 | 10.13 | .0808 | 12 |
| 13 | 8.6073 | 500.280 | 570.797 | 187.513 | 566.1 | 535.1 | 2792.47 | 2299.52 | .5291 | 18.032 | -4.625 | 13.57 | .0805 | 13 |
| 14 | 8.7632 | 591.029 | 552.050 | 180.031 | 565.7 | 535.6 | 2758.78 | 2293.34 | .5207 | 17.826 | -7.129 | 24.82 | .0802 | 14 |
| 15 | 8.9231 | 582.023 | 553.555 | 179.708 | 566.2 | 538.0 | 2740.15 | 2291.31 | .5121 | 17.985 | -9.495 | 0.00 | .0799 | 15 |

STATION 5 IS AT THE EXIT OF A BLADE ROW ROTATING AT 20371.4 RPM.

| STREAM -LINE | RELATIVE GAS ANGLES OPT.IN. INLET | OUTLET | RELATIVE VELOCITIES INLET | OUTLET | RELATIVE MACH NO.S INLET | OUTLET | LOSS COEFF | DE HALL NUMBER | DIFFUS FACTOR | DELTA P UPON Q | BLADE SPEEDS INLET | OUTLET | STREAM -LINE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | -54.526 | -60.024 | 1336.830 | 1111.231 | 1.2251 | .9746 | .0140 | .835 | 0.0000 | .2605 | 1201.5 | 1227.8 | 1 |
| 2 | -54.991 | -60.733 | 1355.243 | 1140.562 | 1.2476 | 1.0008 | .0156 | .842 | 0.0000 | .2446 | 1225.2 | 1252.3 | 2 |
| 3 | -55.787 | -61.413 | 1380.599 | 1170.241 | 1.2712 | 1.0273 | .0159 | .848 | 0.0000 | .2300 | 1255.1 | 1276.9 | 3 |
| 4 | -55.739 | -61.329 | 1406.521 | 1199.437 | 1.2955 | 1.0534 | .0158 | .853 | 0.0000 | .2165 | 1282.3 | 1301.5 | 4 |
| 5 | -56.678 | -62.394 | 1432.743 | 1225.510 | 1.3201 | 1.0795 | .0206 | .857 | 0.0000 | .2037 | 1309.6 | 1325.2 | 5 |
| 6 | -55.402 | -52.335 | 1459.614 | 1257.720 | 1.3443 | 1.1056 | .0226 | .862 | 0.0000 | .1914 | 1337.1 | 1351.0 | 6 |
| 7 | -66.753 | -63.247 | 1485.476 | 1286.369 | 1.3593 | 1.1317 | .0244 | .866 | 0.0000 | .1795 | 1364.9 | 1375.8 | 7 |
| 8 | -67.137 | -63.757 | 1511.512 | 1315.491 | 1.3935 | 1.1578 | .0268 | .871 | 0.0000 | .1678 | 1392.8 | 1400.8 | 8 |
| 9 | -67.567 | -64.235 | 1537.226 | 1345.025 | 1.4171 | 1.1841 | .0292 | .875 | 0.0000 | .1563 | 1420.9 | 1425.9 | 9 |
| 10 | -68.155 | -64.715 | 1562.646 | 1374.191 | 1.4401 | 1.2103 | .0319 | .879 | 0.0000 | .1449 | 1449.4 | 1451.4 | 10 |
| 11 | -68.635 | -65.528 | 1587.755 | 1403.334 | 1.4627 | 1.2365 | .0349 | .884 | 0.0000 | .1338 | 1478.1 | 1477.1 | 11 |
| 12 | -69.276 | -66.237 | 1612.775 | 1432.219 | 1.4848 | 1.2623 | .0385 | .888 | 0.0000 | .1233 | 1507.4 | 1503.4 | 12 |
| 13 | -69.789 | -66.916 | 1637.921 | 1460.577 | 1.5063 | 1.2873 | .0429 | .892 | 0.0000 | .1135 | 1537.1 | 1530.2 | 13 |
| 14 | -70.413 | -67.773 | 1663.025 | 1497.382 | 1.5293 | 1.3103 | .0502 | .894 | 0.0000 | .1048 | 1567.4 | 1557.9 | 14 |
| 15 | -71.000 | -68.515 | 1690.275 | 1511.440 | 1.5527 | 1.3298 | .0623 | .894 | 0.0000 | .0976 | 1598.2 | 1586.3 | 15 |

18

## OVERALL PERFORMANCE PARAMETERS

| | MEAN PARAMETERS STATION-TO-STATION | INLET-TO-STATION |
|---|---|---|
| PRESSURE RATIO | 1.3545 | 1.3545 |
| DELTA T ON T | .0973 | .0973 |
| ISEN. EFFICY. | .9305 | .9305 |

| STREAM-LINE | STATION-TO-STATION-PARAMETERS PRESSURE RATIO | DELTA T ON T | ISENTROPIC EFFICIENCY | INLET-TO-STATION-PARAMETERS PRESSURE RATIO | DELTA T ON T | ISENTROPIC EFFICIENCY |
|---|---|---|---|---|---|---|
| 1 | 1.4044 | .1045 | .9752 | 1.4044 | .1045 | .9752 |
| 2 | 1.3970 | .1031 | .9715 | 1.3970 | .1031 | .9715 |
| 3 | 1.3914 | .1022 | .9612 | 1.3914 | .1022 | .9682 |
| 4 | 1.3868 | .1016 | .9636 | 1.3863 | .1016 | .9636 |
| 5 | 1.3827 | .1011 | .9591 | 1.3527 | .1011 | .9591 |
| 6 | 1.3784 | .1006 | .9542 | 1.3784 | .1006 | .9542 |
| 7 | 1.3733 | .0999 | .9488 | 1.3733 | .0999 | .9488 |
| 8 | 1.3671 | .0991 | .9423 | 1.3671 | .0991 | .9423 |
| 9 | 1.3592 | .0979 | .9352 | 1.3592 | .0979 | .9352 |
| 10 | 1.3498 | .0965 | .9267 | 1.3498 | .0965 | .9267 |
| 11 | 1.3399 | .0948 | .9171 | 1.3399 | .0948 | .9171 |
| 12 | 1.3270 | .0930 | .9053 | 1.3270 | .0930 | .9053 |
| 13 | 1.3149 | .0913 | .8908 | 1.3149 | .0913 | .8908 |
| 14 | 1.3035 | .0905 | .8692 | 1.3035 | .0905 | .8692 |
| 15 | 1.2950 | .0916 | .8363 | 1.2950 | .0916 | .8363 |

## STATION 6
**\*\*\*\*\*\*\*\*\*\***

## GENERAL FLOW PARAMETERS

| LOCATION | RADIUS | VELOCITIES ABSOLUTE | MERIDNL. | TANGENTL. | TEMPERATURES TOTAL | STATIC | PRESSURES TOTAL | STATIC | MACH NUMBER | WHIRL ANGLE | SLOPE ANGLE | RAD.OF CURVTRE. | STATIC DENSITY | LOCATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7.0871 | 739.962 | 533.743 | 506.193 | 624.3 | 573.3 | 3994.57 | 3054.23 | .6274 | 43.162 | 24.430 | 88.33 | .0992 | 1 |
| 2 | 7.2099 | 737.123 | 542.255 | 493.310 | 625.2 | 580.0 | 3994.89 | 3071.41 | .6246 | 42.639 | 22.468 | -324.14 | .0993 | 2 |
| 3 | 7.3329 | 736.185 | 545.578 | 494.280 | 625.9 | 583.5 | 4001.82 | 3079.84 | .6234 | 42.175 | 20.347 | -49.80 | .0994 | 3 |
| 4 | 7.4556 | 735.540 | 549.051 | 430.952 | 627.0 | 581.9 | 4014.51 | 3090.23 | .6231 | 41.903 | 18.119 | -26.82 | .0996 | 4 |
| 5 | 7.5783 | 737.032 | 552.432 | 455.644 | 628.3 | 583.0 | 4031.97 | 3103.04 | .6233 | 41.494 | 15.814 | -18.93 | .0998 | 5 |
| 6 | 7.7010 | 738.566 | 555.214 | 437.506 | 629.4 | 584.3 | 4052.92 | 3118.11 | .6237 | 41.285 | 13.452 | -15.26 | .1001 | 6 |
| 7 | 7.8239 | 739.743 | 557.136 | 452.283 | 631.4 | 585.8 | 4075.59 | 3135.24 | .6239 | 41.143 | 11.045 | -13.38 | .1004 | 7 |
| 8 | 7.9459 | 740.336 | 551.118 | 436.418 | 533.1 | 567.5 | 4038.15 | 3153.91 | .6233 | 41.073 | 8.605 | -12.59 | .1007 | 8 |
| 9 | 8.0706 | 739.606 | 557.576 | 485.327 | 634.8 | 589.2 | 4118.60 | 3173.57 | .6213 | 41.072 | 6.128 | -12.52 | .1018 | 9 |
| 10 | 8.1956 | 737.580 | 557.534 | 435.185 | 636.4 | 591.1 | 4135.71 | 3193.63 | .6191 | 41.133 | 3.608 | -13.14 | .1013 | 10 |
| 11 | 8.3219 | 734.923 | 551.950 | 435.455 | 637.3 | 593.0 | 4148.01 | 3213.36 | .6151 | 41.238 | 1.046 | -14.80 | .1016 | 11 |
| 12 | 8.4503 | 726.944 | 542.751 | 482.103 | 639.3 | 595.1 | 4164.60 | 3232.15 | .6099 | 41.405 | -1.566 | -18.30 | .1019 | 12 |
| 13 | 8.5815 | 722.721 | 533.078 | 490.700 | 640.8 | 597.3 | 4155.97 | 3249.44 | .6034 | 41.692 | -4.222 | -26.12 | .1020 | 13 |
| 14 | 8.7155 | 716.553 | 531.436 | 431.903 | 643.1 | 500.3 | 4154.37 | 3264.90 | .5959 | 42.256 | -6.893 | -50.50 | .1028 | 14 |
| 15 | 8.8552 | 713.211 | 514.602 | -99.331 | 647.0 | 60..7 | 4155.13 | 3278.25 | .5919 | 43.322 | -9.448 | 1667.50 | .1017 | 15 |

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STATION 5 IS AT THE EXIT OF A BLADE ROW ROTATING AT 20272.4 RPM.

| STREAM -LINE | RELATIVE GAS ANGLES OPT.IN.INLET | OUTLET | RELATIVE VELOCITIES INLET | OUTLET | RELATIVE MACH NO.S INLET | OUTLET | LOSS COEFF | DE HALL NUMBER | DIFFUS FACTOR | DELTA P UPON Q | BLADE SPEEDS INLET | OUTLET | STREAM -LINE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | -50.024 | -54.59 | 1111.226 | 927.995 | .9745 | .7951 | .0291 | .834 | 0.0000 | .3063 | 1227.8 | 1259.9 | 1 |
| 2 | -60.798 | -55.278 | 1140.655 | 951.937 | 1.0003 | .8067 | .0319 | .835 | 0.0000 | .2961 | 1252.3 | 1281.7 | 2 |
| 3 | -51.413 | -56.017 | 1170.231 | 976.336 | 1.0273 | .8265 | .0349 | .834 | 0.0000 | .2869 | 1276.9 | 1303.6 | 3 |
| 4 | -61.32 | -56.057 | 1199.421 | 993.313 | 1.0533 | .8451 | .0335 | .833 | 0.0000 | .2793 | 1301.5 | 1325.4 | 4 |
| 5 | -62.393 | -57.242 | 1228.508 | 1020.954 | 1.0795 | .8529 | .0419 | .831 | 0.0000 | .2729 | 1326.2 | 1347.2 | 5 |
| 6 | -62.035 | -57.735 | 1257.684 | 1041.730 | 1.1055 | .8795 | .0459 | .828 | 0.0000 | .2676 | 1351.0 | 1369.0 | 6 |
| 7 | -63.286 | -58.351 | 1239.821 | 1061.374 | 1.1317 | .8953 | .0500 | .825 | 0.0000 | .2633 | 1375.8 | 1390.9 | 7 |
| 8 | -63.706 | -59.029 | 1315.530 | 1081.449 | 1.1577 | .9105 | .0542 | .827 | 0.0000 | .2596 | 1400.8 | 1412.8 | 8 |
| 9 | -64.297 | -59.557 | 1344.963 | 1100.446 | 1.1840 | .9251 | .0590 | .818 | 0.0000 | .2563 | 1425.0 | 1434.7 | 9 |
| 10 | -64.881 | -50.242 | 1374.113 | 1119.268 | 1.2102 | .9395 | .0644 | .815 | 0.0000 | .2529 | 1451.4 | 1457.0 | 10 |
| 11 | -65.527 | -60.392 | 1403.260 | 1138.225 | 1.2364 | .9538 | .0701 | .821 | 0.0000 | .2492 | 1477.1 | 1479.4 | 11 |
| 12 | -66.236 | -61.300 | 1432.163 | 1157.297 | 1.2622 | .9652 | .0767 | .808 | 0.0000 | .2449 | 1503.4 | 1502.2 | 12 |
| 13 | -66.996 | -62.680 | 1460.573 | 1175.373 | 1.2873 | .9818 | .0854 | .805 | 0.0000 | .2397 | 1530.2 | 1525.6 | 13 |
| 14 | -57.774 | -63.578 | 1437.455 | 1192.024 | 1.3104 | .9928 | .0994 | .801 | 0.0000 | .2341 | 1557.9 | 1543.6 | 14 |
| 15 | -68.217 | -64.440 | 1512.604 | 1202.558 | 1.3293 | .9380 | .1226 | .796 | 0.0000 | .2264 | 1586.3 | 1574.4 | 15 |

## OVERALL PERFORMANCE PARAMETERS

| MEAN PARAMETERS | STATION-TO-STATION | INLET-TO-STATION |
|---|---|---|
| PRESSURE RATIO | 1.4299 | 1.9358 |
| DELTA T ON T | .1145 | .2229 |
| ISEN. EFFICY. | .9367 | .9308 |

| STREAM -LINE | STATION-TO-STATION-PARAMETERS PRESSURE RATIO | DELTA T ON T | ISENTROPIC EFFICIENCY | INLET-TO-STATION-PARAMETERS PRESSURE RATIO | DELTA T ON T | ISENTROPIC EFFICIENCY |
|---|---|---|---|---|---|---|
| 1 | 1.3435 | .0905 | .9715 | 1.8873 | .2046 | .9723 |
| 2 | 1.3514 | .097 | .9093 | 1.8873 | .2053 | .9690 |
| 3 | 1.3593 | .0949 | .9554 | 1.8912 | .2067 | .9653 |
| 4 | 1.3631 | .0973 | .9519 | 1.8973 | .2088 | .9511 |
| 5 | 1.3781 | .1000 | .9547 | 1.9055 | .2112 | .9570 |
| 6 | 1.3895 | .1032 | .9546 | 1.9154 | .2142 | .9523 |
| 7 | 1.4025 | .1067 | .9504 | 1.9251 | .2173 | .9473 |
| 8 | 1.4167 | .1105 | .9458 | 1.9367 | .2205 | .9421 |
| 9 | 1.4320 | .1146 | .9424 | 1.9464 | .2237 | .9362 |
| 10 | 1.4480 | .1189 | .9378 | 1.9545 | .2259 | .9295 |
| 11 | 1.4641 | .1233 | .9328 | 1.9503 | .2298 | .9224 |
| 12 | 1.4796 | .1277 | .9272 | 1.9635 | .2325 | .9140 |
| 13 | 1.4935 | .1321 | .9171 | 1.9641 | .2354 | .9030 |
| 14 | 1.5059 | .1369 | .9051 | 1.9533 | .2393 | .8960 |
| 15 | 1.5164 | .1427 | .8344 | 1.9637 | .2474 | .8589 |

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## GENERAL FLOW PARAMETERS

| LOCA TION | RADIUS | VELOCITIES ABSOLUTE | MERIDNL. | TANGENTL. | TEMPERATURES TOTAL | STATIC | PRESSURES TOTAL | STATIC | MACH NUMBER | WHIRL ANGLE | SLOPE ANGLE | RAD.OF CURVTRE. | STATIC DENSITY | LOCA TION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7.2700 | 322.571 | 615.322 | 687.398 | 666.5 | 595.7 | 4969.29 | 3353.30 | .7714 | 48.167 | 24.400 | -73.05 | .1056 | 1 |
| 2 | 7.3750 | 321.791 | 621.119 | 681.109 | 667.3 | 596.6 | 4977.03 | 3362.44 | .7702 | 47.638 | 21.746 | -18.16 | .1057 | 2 |
| 3 | 7.4792 | 321.165 | 624.116 | 677.513 | 668.6 | 593.0 | 4993.49 | 3378.10 | .7657 | 47.349 | 19.052 | -11.62 | .1059 | 3 |
| 4 | 7.5829 | 320.936 | 625.299 | 675.109 | 670.4 | 593.8 | 5018.63 | 3399.57 | .7674 | 47.236 | 16.378 | -9.26 | .1063 | 4 |
| 5 | 7.6567 | 321.191 | 625.356 | 675.377 | 672.5 | 601.9 | 5052.43 | 3425.90 | .7652 | 47.263 | 13.733 | -8.28 | .1067 | 5 |
| 6 | 7.7387 | 321.028 | 624.571 | 677.996 | 675.0 | 604.3 | 5032.22 | 3456.81 | .7653 | 47.349 | 11.159 | -7.76 | .1073 | 6 |
| 7 | 7.8954 | 322.618 | 623.000 | 630.511 | 677.7 | 606.8 | 5135.94 | 3488.84 | .7643 | 47.526 | 8.652 | -7.71 | .1078 | 7 |
| 8 | 8.0005 | 323.172 | 620.461 | 633.574 | 680.5 | 603.6 | 5138.42 | 3523.31 | .7630 | 47.771 | 6.221 | -7.90 | .1084 | 8 |
| 9 | 8.1055 | 323.139 | 617.165 | 636.508 | 683.4 | 612.5 | 5223.24 | 3558.56 | .7612 | 48.045 | 3.851 | -8.59 | .1094 | 9 |
| 10 | 8.2145 | 322.220 | 612.630 | 639.329 | 686.3 | 615.5 | 5251.81 | 3593.85 | .7595 | 48.372 | 1.524 | -9.62 | .1095 | 10 |
| 11 | 8.3236 | 320.220 | 605.905 | 691.717 | 689.1 | 513.6 | 5274.61 | 3628.45 | .7550 | 48.737 | -.763 | -11.26 | .1108 | 11 |
| 12 | 8.4348 | 317.469 | 533.797 | 634.256 | 692.0 | 522.0 | 5321.93 | 4662.02 | .7507 | 49.175 | -3.031 | -13.92 | .1104 | 12 |
| 13 | 8.5437 | 314.346 | 530.334 | 638.134 | 695.4 | 525.8 | 5344.41 | 3694.25 | .7453 | 43.703 | -5.205 | -18.79 | .1107 | 13 |
| 14 | 8.5665 | 312.580 | 577.105 | 706.931 | 700.1 | 630.8 | 5366.75 | 3724.90 | .7415 | 50.774 | -7.491 | -31.90 | .1108 | 14 |
| 15 | 8.7694 | 316.227 | 550.812 | 727.621 | 708.1 | 533.2 | 5408.42 | 3752.99 | .7401 | 52.375 | -9.448 | -1667.50 | .1103 | 15 |

STATION 7 IS AT THE EXIT OF A BLADE ROW ROTATING AT 20371.4 RPM.

| STREAM -LINE | RELATIVE GAS ANGLES OPT.IN. INLET | OUTLET | RELATIVE VELOCITIES INLET | OUTLET | RELATIVE MACH NO.S INLET | MACH NO.S OUTLET | LOSS COEFF | DE HALL NUMBER | DIFFUS FACTOR | DELTA P UPON Q | BLADE SPEEDS INLET | OUTLET | STREAM -LINE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | -54.393 | -44.527 | 927.045 | 863.095 | .7860 | .7216 | .0442 | .931 | 0.0000 | .1074 | 1258.9 | 1292.4 | 1 |
| 2 | -55.276 | -45.414 | 951.956 | 884.308 | .8065 | .7393 | .0473 | .929 | 0.0000 | .1773 | 1281.7 | 1311.1 | 2 |
| 3 | -56.015 | -46.252 | 975.035 | 902.731 | .8265 | .7533 | .0520 | .925 | 0.0000 | .1713 | 1303.6 | 1323.6 | 3 |
| 4 | -56.657 | -47.163 | 998.696 | 917.935 | .8451 | .7549 | .0575 | .919 | 0.0000 | .1681 | 1325.4 | 1340.0 | 4 |
| 5 | -57.242 | -47.418 | 1020.953 | 931.343 | .8603 | .7747 | .0631 | .912 | 0.0000 | .1664 | 1347.2 | 1366.5 | 5 |
| 6 | -57.795 | -48.241 | 1041.735 | 945.339 | .8795 | .7431 | .0690 | .905 | 0.0000 | .1656 | 1369.0 | 1385.0 | 6 |
| 7 | -58.352 | -49.250 | 1061.912 | 954.403 | .8951 | .7306 | .0753 | .899 | 0.0380 | .1652 | 1390.9 | 1403.6 | 7 |
| 8 | -53.131 | -49.370 | 1081.477 | 964.653 | .9105 | .7973 | .0821 | .892 | 0.0000 | .1648 | 1412.8 | 1422.3 | 8 |
| 9 | -53.560 | -50.720 | 1100.524 | 974.415 | .9252 | .8038 | .0890 | .886 | 0.0000 | .1643 | 1434.7 | 1441.2 | 9 |
| 10 | -50.245 | -51.525 | 1119.562 | 984.563 | .9345 | .8090 | .0967 | .880 | 0.0000 | .1635 | 1457.0 | 1460.3 | 10 |
| 11 | -50.395 | -52.192 | 1133.334 | 994.527 | .9533 | .9160 | .1051 | .874 | 0.0000 | .1624 | 1479.4 | 1479.7 | 11 |
| 12 | -51.311 | -53.314 | 1157.417 | 1003.364 | .9653 | .8215 | .1148 | .867 | 0.0000 | .1613 | 1502.2 | 1493.5 | 12 |
| 13 | -52.084 | -54.293 | 1176.003 | 1011.558 | .9913 | .1252 | .1276 | .850 | 0.0000 | .1604 | 1525.6 | 1519.7 | 13 |
| 14 | -63.581 | -55.506 | 1192.165 | 1013.344 | .9329 | .8238 | .1474 | .850 | 0.0000 | .1606 | 1549.6 | 1540.7 | 14 |
| 15 | -54.444 | -56.242 | 1202.747 | 1003.341 | .9381 | .8105 | .1814 | .834 | 0.0000 | .1630 | 1574.4 | 1562.5 | 15 |

## OVERALL PERFORMANCE PARAMETERS

| STREAM -LINE | STATION-TO-STATION-PARAMETERS PRESSURE RATIO | DELTA T ON T | ISENTROPIC EFFICIENCY | INLET-TO-STATION-PARAMETERS PRESSURE RATIO | DELTA T ON T | ISENTROPIC EFFICIENCY |
|---|---|---|---|---|---|---|
| 1 | 1.2440 | .0667 | .9646 | 2.3434 | .2850 | .9668 |
| 2 | 1.2459 | .0673 | .9530 | 2.3521 | .2864 | .9658 |
| 3 | 1.2478 | .0681 | .9579 | 2.3599 | .2690 | .9615 |
| 4 | 1.2502 | .0592 | .9514 | 2.3719 | .2924 | .9566 |
| 5 | 1.2531 | .0704 | .9449 | 2.3977 | .2945 | .9515 |
| 6 | 1.2564 | .0715 | .9385 | 2.4065 | .3013 | .9460 |
| 7 | 1.2502 | .0733 | .9316 | 2.4272 | .3065 | .9402 |
| 8 | 1.2541 | .0750 | .9233 | 2.4432 | .3120 | .9337 |
| 9 | 1.2582 | .0766 | .9159 | 2.4685 | .3175 | .9271 |
| 10 | 1.2723 | .0784 | .9077 | 2.4867 | .3231 | .9196 |
| 11 | 1.2764 | .0803 | .8995 | 2.5022 | .3285 | .9113 |
| 12 | 1.2910 | .0822 | .8078 | 2.5151 | .3342 | .9016 |
| 13 | 1.2850 | .0852 | .8742 | 2.5257 | .3407 | .8891 |
| 14 | 1.2916 | .0887 | .8554 | 2.5361 | .3497 | .8705 |
| 15 | 1.2997 | .0944 | .8237 | 2.5522 | .3651 | .8401 |

### MEAN PARAMETERS

|  | STATION-TO-STATION | INLET-TO-STATION |
|---|---|---|
| PRESSURE RATIO | 1.2681 | 2.4543 |
| DELTA T ON T | .0772 | .3173 |
| ISEN. EFFICY. | .3094 | .9203 |

## STATION 8

### GENERAL FLOW PARAMETERS

| LOCATION | RADIUS | VELOCITIES ABSOLUTE | MERIDNL. | TANGENTL. | TEMPERATURES TOTAL | STATIC | PRESSURES TOTAL | STATIC | MACH NUMBER | WHIRL ANGLE | SLOPE ANGLE | RAD.OF CURVTRE. | STATIC DENSITY | LOCATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7.4500 | 1141.729 | 720.475 | 935.690 | 713.9 | 505.4 | 6270.13 | 3519.95 | .9469 | 50.873 | 19.831 | -2.69 | .1090 | 1 |
| 2 | 7.5233 | 1140.244 | 710.230 | 892.036 | 717.4 | 509.2 | 6353.53 | 3583.42 | .9425 | 51.474 | 17.023 | -2.90 | .1103 | 2 |
| 3 | 7.5090 | 1137.294 | 693.562 | 897.465 | 726.4 | 613.1 | 6427.74 | 3647.39 | .9373 | 52.104 | 14.374 | -3.21 | .1116 | 3 |
| 4 | 7.6905 | 1134.305 | 696.362 | 903.076 | 724.2 | 517.1 | 6498.58 | 3710.32 | .9318 | 52.764 | 11.877 | -3.62 | .1128 | 4 |
| 5 | 7.7735 | 1132.293 | 675.049 | 903.054 | 727.8 | 521.1 | 6571.74 | 3771.56 | .9272 | 53.404 | 9.518 | -4.16 | .1139 | 5 |
| 6 | 7.3585 | 1131.032 | 654.742 | 915.657 | 731.6 | 525.1 | 6646.30 | 3830.71 | .9236 | 54.020 | 7.289 | -4.86 | .1149 | 6 |
| 7 | 7.9454 | 1132.169 | 655.049 | 922.966 | 735.7 | 529.0 | 6729.25 | 3887.74 | .9212 | 54.509 | 5.171 | -5.79 | .1159 | 7 |
| 8 | 8.0339 | 1133.743 | 647.055 | 930.952 | 740.0 | 533.1 | 6811.42 | 3942.53 | .9196 | 55.199 | 3.154 | -7.04 | .1168 | 8 |
| 9 | 8.1243 | 1136.125 | 633.033 | 939.336 | 744.5 | 537.1 | 6894.67 | 3995.31 | .9185 | 55.771 | 1.218 | -8.79 | .1176 | 9 |
| 10 | 8.2157 | 1138.324 | 641.031 | 943.008 | 749.2 | 541.3 | 5975.23 | 4046.37 | .9177 | 56.351 | -.660 | -11.44 | .1183 | 10 |
| 11 | 8.3111 | 1141.329 | 622.303 | 955.955 | 754.1 | 545.6 | 7056.44 | 4095.86 | .9171 | 56.939 | -2.496 | -15.85 | .1190 | 11 |
| 12 | 8.4079 | 1145.770 | 615.395 | 957.747 | 759.5 | 550.3 | 7135.51 | 4144.31 | .9159 | 57.632 | -4.317 | -24.50 | .1195 | 12 |
| 13 | 8.5074 | 1150.425 | 600.840 | 931.641 | 765.2 | 555.2 | 7223.95 | 4192.49 | .9173 | 58.530 | -6.132 | -47.86 | .1199 | 13 |
| 14 | 8.6113 | 1159.755 | 578.824 | 1004.496 | 774.8 | 662.9 | 7324.55 | 4242.00 | .9192 | 50.061 | -7.912 | -196.99 | .1200 | 14 |
| 15 | 8.7225 | 1173.382 | 539.543 | 1043.319 | 739.6 | 674.1 | 7474.53 | 4294.76 | .9264 | 52.914 | -9.495 | 0.00 | .1195 | 15 |

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STATION 3 IS AT THE EXIT OF A BLADE ROW ROTATING AT 20372.4 RPM.

| STREAM -LINE | RELATIVE GAS ANGLES OPT.IN. INLET | OUTLET | RELATIVE VELOCITIES INLET | OUTLET | RELATIVE MACH NO.S INLET | OUTLET | LOSS COEFF | DE HALL NUMBER | DIFFUS FACTOR | DELTA P UPON Q | BLADE SPEEDS INLET | OUTLET | STREAM -LINE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | -44.516 | -31.323 | 852.942 | 843.653 | .7215 | .6395 | .0610 | .977 | 0.0000 | .1200 | 1292.4 | 1326.4 | 1 |
| 2 | -45.405 | -32.141 | 934.674 | 838.780 | .7391 | .6335 | .0659 | .948 | 0.0000 | .1502 | 1311.1 | 1338.4 | 2 |
| 3 | -45.256 | -33.031 | 902.631 | 833.700 | .7533 | .6371 | .0718 | .924 | 0.0000 | .1746 | 1329.6 | 1352.7 | 3 |
| 4 | -47.059 | -34.056 | 917.874 | 828.456 | .7643 | .6606 | .0790 | .903 | 0.0000 | .1933 | 1348.0 | 1367.2 | 4 |
| 5 | -47.417 | -35.005 | 931.323 | 824.133 | .7747 | .6748 | .0864 | .895 | 0.0000 | .2072 | 1366.5 | 1381.9 | 5 |
| 6 | -48.542 | -35.905 | 943.355 | 820.726 | .7831 | .6599 | .0941 | .870 | 0.0000 | .2172 | 1385.0 | 1397.8 | 6 |
| 7 | -49.252 | -36.742 | 954.468 | 816.250 | .7907 | .6558 | .1021 | .857 | 0.0030 | .2241 | 1403.6 | 1412.5 | 7 |
| 8 | -49.373 | -37.542 | 954.720 | 816.074 | .7974 | .6519 | .1110 | .845 | 0.0000 | .2287 | 1422.3 | 1428.2 | 8 |
| 9 | -50.724 | -38.316 | 974.096 | 814.332 | .8033 | .6585 | .1202 | .836 | 0.0000 | .2315 | 1441.2 | 1444.3 | 9 |
| 10 | -51.529 | -39.100 | 934.751 | 813.128 | .8100 | .6553 | .1302 | .826 | 0.0000 | .2334 | 1460.3 | 1460.7 | 10 |
| 11 | -52.397 | -39.632 | 934.621 | 811.362 | .8161 | .6521 | .1408 | .916 | 0.0000 | .2347 | 1479.7 | 1477.5 | 11 |
| 12 | -53.319 | -40.677 | 1004.557 | 909.770 | .9215 | .6472 | .1536 | .905 | 0.0000 | .2362 | 1499.5 | 1494.7 | 12 |
| 13 | -54.293 | -41.467 | 1011.676 | 801.331 | .8253 | .6390 | .1697 | .793 | 0.0000 | .2394 | 1519.7 | 1512.4 | 13 |
| 14 | -55.310 | -42.270 | 1013.990 | 782.215 | .8239 | .5200 | .1952 | .771 | 0.0000 | .2473 | 1540.7 | 1538.9 | 14 |
| 15 | -56.300 | -43.056 | 1003.545 | 734.254 | .8107 | .5774 | .2381 | .732 | 0.0000 | .2671 | 1562.5 | 1558.6 | 15 |

OVERALL PERFORMANCE PARAMETERS

| | |
|---|---|
| MEAN PARAMETERS | STATION-TO-STATION INLET-TO-STATION |
| PRESSURE RATIO | 1.3215   3.2453 |
| DELTA T ON T | .0984   .4357 |
| ISEN. EFFICY. | .9167   .9158 |

| STREAM -LINE | STATION-TO-STATION-PARAMETERS PRESSURE RATIO | DELTA T ON T | ISENTROPIC EFFICIENCY | INLET-TO-STATION-PARAMETERS PRESSURE RATIO | DELTA T ON T | ISENTROPIC EFFICIENCY |
|---|---|---|---|---|---|---|
| 1 | 1.2618 | .0711 | .9651 | 2.9032 | .3754 | .9663 |
| 2 | 1.2765 | .0751 | .9512 | 3.0025 | .3831 | .9628 |
| 3 | 1.2972 | .0780 | .9532 | 3.0577 | .3595 | .9585 |
| 4 | 1.2943 | .0803 | .9534 | 3.0712 | .3962 | .9534 |
| 5 | 1.3007 | .0822 | .9453 | 3.1057 | .4031 | .9479 |
| 6 | 1.3056 | .0839 | .9427 | 3.1419 | .4105 | .9420 |
| 7 | 1.3102 | .0856 | .9369 | 3.1807 | .4184 | .9355 |
| 8 | 1.3148 | .0874 | .9331 | 3.2190 | .4267 | .9288 |
| 9 | 1.3280 | .0894 | .9224 | 3.2654 | .4354 | .9214 |
| 10 | 1.3258 | .0917 | .9147 | 3.2967 | .4444 | .9133 |
| 11 | 1.3325 | .0943 | .9070 | 3.3343 | .4538 | .9046 |
| 12 | 1.3413 | .0975 | .8974 | 3.3735 | .4642 | .8943 |
| 13 | 1.3517 | .1013 | .8476 | 3.4141 | .4765 | .8814 |
| 14 | 1.3649 | .1057 | .3791 | 3.4615 | .4939 | .8613 |
| 15 | 1.3941 | .1151 | .8402 | 3.5324 | .5223 | .8307 |

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## STATION 9
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### GENERAL FLOW PARAMETERS

| LOCA TION | RADIUS | VELOCITIES ABSOLUTE | AXIOAL TANGNTL. | TEMPERATURES TOTAL | STATIC | PRESSURES TOTAL | STATIC | MACH NUMBER | WHIRL ANGLE | SLOPE ANGLE | RAD.OF CURVTRE. | STATIC DENSITY | LOCA TION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7.5555 | 1246.410 | 788.016  705.895 | 734.7 | 602.4 | 5868.81 | 3445.63 | 1.0338 | 50.785 | 9.745 | -2.10 | .1080 | 1 |
| 2 | 7.6196 | 1233.331 | 732.57  765.875 | 736.7 | 610.1 | 5895.13 | 3562.11 | 1.0190 | 51.624 | 8.934 | -2.95 | .1095 | 2 |
| 3 | 7.6844 | 1222.084 | 747.027  956.716 | 738.4 | 614.2 | 5911.22 | 3624.15 | 1.0063 | 52.283 | 7.933 | -4.23 | .1107 | 3 |
| 4 | 7.7510 | 1212.650 | 732.495  956.427 | 740.4 | 618.0 | 5921.85 | 3675.98 | .9455 | 52.840 | 6.816 | -6.33 | .1116 | 4 |
| 5 | 7.8205 | 1205.580 | 720.216  905.557 | 742.4 | 621.5 | 5933.97 | 3720.03 | .9857 | 53.309 | 5.525 | -10.40 | .1123 | 5 |
| 6 | 7.8929 | 1200.617 | 713.504  707.993 | 744.8 | 624.8 | 5952.52 | 3755.39 | .9802 | 53.723 | 4.365 | -20.49 | .1128 | 6 |
| 7 | 7.9675 | 1198.377 | 702.570  770.822 | 747.5 | 623.1 | 5938.04 | 3792.39 | .9758 | 54.107 | 3.090 | -102.19 | .1132 | 7 |
| 8 | 8.0445 | 1198.220 | 635.201  975.153 | 750.8 | 631.4 | 7014.50 | 5822.67 | .9731 | 54.473 | 1.817 | 41.65 | .1136 | 8 |
| 9 | 8.1237 | 1199.583 | 690.276  991.080 | 754.6 | 633.8 | 7053.11 | 5850.72 | .9716 | 54.870 | .517 | 19.57 | .1138 | 9 |
| 10 | 8.2052 | 1202.612 | 735.190  983.383 | 752.7 | 633.3 | 7098.75 | 5876.79 | .9714 | 55.272 | -.805 | 13.62 | .1140 | 10 |
| 11 | 8.2897 | 1207.574 | 679.392  997.983 | 763.5 | 642.1 | 7155.05 | 5901.52 | .9725 | 55.735 | -2.118 | 10.52 | .1140 | 11 |
| 12 | 8.3744 | 1214.725 | 573.642  1010.923 | 769.2 | 645.4 | 7217.53 | 5925.46 | .9750 | 56.320 | -3.461 | 8.72 | .2139 | 12 |
| 13 | 8.4627 | 1224.463 | 652.955  1029.456 | 776.5 | 651.7 | 7293.65 | 5949.72 | .9788 | 57.219 | -4.862 | 7.64 | .1137 | 13 |
| 14 | 8.5553 | 1239.213 | 630.457  1050.313 | 787.1 | 659.6 | 7387.22 | 5977.09 | .9339 | 58.906 | -6.386 | 7.28 | .1131 | 14 |
| 15 | 8.6556 | 1261.173 | 596.435  1117.557 | 805.0 | 672.6 | 7529.25 | 6014.24 | .9923 | 52.391 | -8.250 | 9.27 | .1119 | 15 |

STATION  9  IS AT THE EXIT OF A BLADE ROW ROTATING AT 20371.4 RPM.

| STREAM -LINE | RELATIVE GAS ANGLES OPT.IN. INLET | OUTLET | RELATIVE VELOCITIES INLET | OUTLET | RELATIVE MACH IO.S INLET | OUTLET | LOSS COEFF | DE HALL NUMBER | DIFFUS FACTOR | DELTA P UPON Q | BLADE SPEEDS INLET | OUTLET | STREAM -LINE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | -31.339 | -25.512 | 943.538 | 873.381 | .6995 | .7246 | .0500 | 1.036 | 0.0000 | -.0245 | 1324.4 | 1343.7 | 1 |
| 2 | -32.151 | -26.842 | 938.673 | 858.147 | .6935 | .7090 | .0875 | 1.023 | 0.0000 | -.0157 | 1338.4 | 1354.6 | 2 |
| 3 | -33.090 | -28.090 | 933.793 | 947.498 | .6872 | .6978 | .0952 | 1.016 | 0.0000 | -.0172 | 1352.7 | 1366.0 | 3 |
| 4 | -34.065 | -29.719 | 429.540 | 840.095 | .6805 | .6696 | .1038 | 1.014 | 0.0000 | -.0255 | 1367.2 | 1377.9 | 4 |
| 5 | -35.012 | -30.464 | 824.200 | 835.583 | .6749 | .6840 | .1126 | 1.014 | 0.0000 | -.0363 | 1381.9 | 1398.3 | 5 |
| 6 | -35.909 | -31.633 | 320.771 | 833.109 | .5699 | .6302 | .1217 | 1.015 | 0.0000 | -.0538 | 1397.0 | 1403.1 | 6 |
| 7 | -36.743 | -32.765 | 818.263 | 831.971 | .6653 | .6775 | .1313 | 1.017 | 0.0000 | -.0709 | 1412.5 | 1415.4 | 7 |
| 8 | -37.541 | -33.163 | 316.063 | 831.754 | .5619 | .6755 | .1413 | 1.019 | 0.0000 | -.0888 | 1428.2 | 1430.1 | 8 |
| 9 | -38.313 | -33.456 | 314.494 | 831.259 | .6585 | .6733 | .1527 | 1.021 | 0.0000 | -.1071 | 1444.3 | 1444.2 | 9 |
| 10 | -39.194 | -34.071 | 313.053 | 831.026 | .6552 | .6712 | .1643 | 1.022 | 0.0000 | -.1255 | 1460.7 | 1459.7 | 10 |
| 11 | -39.985 | -34.074 | 311.771 | 929.731 | .6520 | .6082 | .1771 | 1.022 | 0.0000 | -.1436 | 1477.5 | 1473.5 | 11 |
| 12 | -40.665 | -35.360 | 309.553 | 826.017 | .6471 | .6536 | .1919 | 1.021 | 0.0000 | -.1624 | 1494.7 | 1488.7 | 12 |
| 13 | -41.455 | -35.628 | 801.666 | 815.647 | .6389 | .6520 | .2116 | 1.017 | 0.0000 | -.1832 | 1512.4 | 1504.5 | 13 |
| 14 | -42.255 | -35.775 | 792.030 | 788.185 | .6193 | .6263 | .2422 | 1.008 | 0.0000 | -.2112 | 1530.9 | 1520.9 | 14 |
| 15 | -43.051 | -35.791 | 734.371 | 720.557 | .5772 | .5570 | .2933 | .981 | 0.0000 | -.2579 | 1550.6 | 1538.7 | 15 |

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## OVERALL PERFORMANCE PARAMETERS

| | MEAN PARAMETERS | | |
|---|---|---|---|
| | PRESSURE RATIO | DELTA T ON T | ISEN. EFFICY. |
| STATION-TO-STATION | 1.0342 | .0172 | .5619 |
| INLET-TO-STATION | 3.3524 | .4612 | .8946 |

| STREAM-LINE | STATION-TO-STATION-PARAMETERS | | | INLET-TO-STATION-PARAMETERS | | |
|---|---|---|---|---|---|---|
| | PRESSURE RATIO | DELTA T ON T | ISENTROPIC EFFICIENCY | PRESSURE RATIO | DELTA T ON T | ISENTROPIC EFFICIENCY |
| 1 | 1.0955 | .0291 | .9059 | 3.2461 | .4155 | .9597 |
| 2 | 1.0552 | .0269 | .8774 | 3.2586 | .4203 | .9545 |
| 3 | 1.0752 | .0247 | .8481 | 3.2662 | .4238 | .9488 |
| 4 | 1.0551 | .0223 | .8137 | 3.2712 | .4274 | .9424 |
| 5 | 1.0551 | .0201 | .7693 | 3.2763 | .4313 | .9355 |
| 6 | 1.0458 | .0180 | .7158 | 3.2857 | .4359 | .9281 |
| 7 | 1.0373 | .0162 | .6493 | 3.2987 | .4413 | .9202 |
| 8 | 1.0298 | .0145 | .5735 | 3.3150 | .4475 | .9118 |
| 9 | 1.0230 | .0135 | .4333 | 3.3332 | .4547 | .9023 |
| 10 | 1.0176 | .0126 | .3940 | 3.3549 | .4627 | .8924 |
| 11 | 1.0137 | .0125 | .3115 | 3.3605 | .4719 | .8814 |
| 12 | 1.0111 | .0125 | .2459 | 3.4110 | .4829 | .8689 |
| 13 | 1.0096 | .0133 | .1974 | 3.4463 | .4970 | .8528 |
| 14 | 1.0086 | .0159 | .1535 | 3.4911 | .5175 | .8291 |
| 15 | 1.0073 | .0194 | .1073 | 3.5583 | .5519 | .7916 |

### STATION 10
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## GENERAL FLOW PARAMETERS

| LOCATION | RADIUS | VELOCITIES | | | TEMPERATURES | | PRESSURES | | MACH NUMBER | WHIRL ANGLE | SLOPE ANGLE | RAD.OF CURVTRE. | STATIC DENSITY | LOCATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ABSOLUTE | MERIDNL. | TANGENTL. | TOTAL | STATIC | TOTAL | STATIC | | | | | | |
| 1 | 7.5840 | 1208.239 | 730.371 | 962.496 | 734.7 | 613.2 | 5868.81 | 3647.54 | .9957 | 52.808 | 7.305 | 9.51 | .1116 | 1 |
| 2 | 7.6493 | 1212.206 | 735.776 | 963.398 | 736.7 | 614.5 | 6895.13 | 3652.06 | .9979 | 52.632 | 6.937 | 14.94 | .1115 | 2 |
| 3 | 7.7142 | 1215.076 | 740.844 | 963.100 | 736.5 | 615.7 | 6911.22 | 3654.87 | .9993 | 52.432 | 6.404 | 18.95 | .1113 | 3 |
| 4 | 7.7815 | 1217.623 | 745.382 | 962.815 | 740.4 | 617.0 | 6921.86 | 3656.21 | 1.0003 | 52.254 | 5.800 | 20.45 | .1111 | 4 |
| 5 | 7.8493 | 1219.670 | 743.243 | 963.182 | 742.4 | 618.6 | 6933.97 | 3660.92 | 1.0007 | 52.158 | 5.129 | 21.72 | .1110 | 5 |
| 6 | 7.9179 | 1221.974 | 749.737 | 961.948 | 744.3 | 620.5 | 6952.62 | 3669.15 | 1.0011 | 52.154 | 4.391 | 19.91 | .1109 | 6 |
| 7 | 7.9832 | 1225.859 | 751.611 | 968.406 | 747.6 | 622.6 | 6930.04 | 3676.90 | 1.0026 | 52.184 | 3.627 | 17.68 | .1108 | 7 |
| 8 | 8.0593 | 1230.012 | 751.929 | 973.413 | 750.8 | 524.9 | 7014.56 | 3688.60 | 1.0041 | 52.315 | 2.813 | 16.80 | .1107 | 8 |
| 9 | 8.1317 | 1234.105 | 749.914 | 980.124 | 754.6 | 627.8 | 7053.11 | 3704.24 | 1.0051 | 52.580 | 1.957 | 13.72 | .1107 | 9 |
| 10 | 8.2056 | 1237.343 | 745.438 | 988.300 | 758.7 | 631.1 | 7098.75 | 3726.15 | 1.0056 | 52.972 | 1.069 | 11.49 | .1107 | 10 |
| 11 | 8.2819 | 1241.732 | 737.758 | 998.805 | 763.5 | 635.2 | 7133.05 | 3755.13 | 1.0055 | 53.549 | .045 | 9.91 | .1109 | 11 |
| 12 | 8.3601 | 1247.443 | 722.650 | 1012.513 | 769.2 | 539.7 | 7217.63 | 3784.43 | 1.0065 | 54.260 | -1.024 | 8.33 | .1118 | 12 |
| 13 | 8.4422 | 1254.193 | 712.746 | 1031.957 | 776.5 | 645.6 | 7233.65 | 3820.79 | 1.0073 | 55.367 | -2.256 | 6.69 | .1118 | 13 |
| 14 | 8.5303 | 1263.601 | 682.421 | 1063.460 | 787.1 | 554.3 | 7347.22 | 3866.31 | 1.0081 | 57.312 | -3.799 | 5.05 | .1108 | 14 |
| 15 | 8.6279 | 1284.386 | 626.392 | 1121.285 | 805.0 | 667.7 | 7529.26 | 3912.15 | 1.0143 | 60.811 | -5.784 | 3.28 | .1099 | 15 |

## GENERAL FLOW PARAMETERS

| LOCA TION | RADIUS | VELOCITIES ABSOLUTE | MERIDNL. | TANGENTL. | TEMPERATURES TOTAL | STATIC | PRESSURES TOTAL | STATIC | MACH NUMBER | WHIRL ANGLE | SLOPE ANGLE | RAD.OF CURVTRE. | STATIC DENSITY | LOCA TION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7.6272 | 1273.341 | 633.263 | 957.223 | 734.7 | 599.9 | 6858.81 | 3375.64 | 1.0507 | 46.757 | 9.164 | 9.81 | .1056 | 1 |
| 2 | 7.6993 | 1287.558 | 651.153 | 957.195 | 736.7 | 598.8 | 6835.13 | 3336.11 | 1.0735 | 48.024 | 8.611 | 11.55 | .1045 | 2 |
| 3 | 7.7636 | 1296.989 | 677.929 | 956.520 | 738.5 | 599.5 | 6911.22 | 3310.95 | 1.0618 | 47.516 | 7.940 | 14.33 | .1037 | 3 |
| 4 | 7.8357 | 1302.685 | 704.535 | 955.284 | 740.4 | 593.2 | 6921.85 | 3298.91 | 1.0860 | 47.230 | 7.194 | 16.59 | .1033 | 4 |
| 5 | 7.9014 | 1306.201 | 683.273 | 956.928 | 742.4 | 600.4 | 6933.97 | 3297.30 | 1.0878 | 47.105 | 6.401 | 23.67 | .1030 | 5 |
| 6 | 7.9653 | 1308.904 | 899.652 | 959.151 | 744.8 | 602.2 | 6952.62 | 3303.49 | 1.0835 | 47.121 | 5.629 | 31.40 | .1029 | 6 |
| 7 | 8.0309 | 1311.563 | 890.116 | 963.271 | 747.6 | 604.4 | 6980.04 | 3315.58 | 1.0587 | 47.261 | 4.867 | 41.18 | .1029 | 7 |
| 8 | 8.0955 | 1314.238 | 917.834 | 968.033 | 750.9 | 607.1 | 7014.56 | 3332.67 | 1.0835 | 47.505 | 4.089 | 50.18 | .1030 | 8 |
| 9 | 8.1609 | 1315.673 | 891.132 | 975.579 | 754.6 | 610.3 | 7053.11 | 3354.30 | 1.0977 | 47.877 | 3.306 | 66.26 | .1031 | 9 |
| 10 | 8.2272 | 1315.593 | 876.344 | 985.647 | 759.7 | 615.9 | 7098.75 | 3381.79 | 1.0863 | 48.360 | 2.488 | 115.06 | .1033 | 10 |
| 11 | 8.2951 | 1320.753 | 868.151 | 997.099 | 763.5 | 619.3 | 7153.05 | 3417.40 | 1.0839 | 49.021 | 1.555 | 328.35 | .1037 | 11 |
| 12 | 8.3654 | 1321.694 | 854.391 | 1011.786 | 769.2 | 623.9 | 7217.63 | 3465.30 | 1.0799 | 49.954 | .519 | -134.41 | .1042 | 12 |
| 13 | 8.4394 | 1321.770 | 825.615 | 1032.199 | 776.5 | 631.1 | 7293.65 | 3525.44 | 1.0737 | 51.345 | -.663 | -42.28 | .1049 | 13 |
| 14 | 8.5196 | 1321.178 | 792.214 | 1054.730 | 787.1 | 641.9 | 7397.22 | 3615.35 | 1.0542 | 53.697 | -2.052 | -23.01 | .1056 | 14 |
| 15 | 8.6114 | 1320.322 | 695.612 | 1123.731 | 805.0 | 653.9 | 7529.26 | 3753.65 | 1.0433 | 58.299 | -3.734 | -13.30 | .1067 | 15 |

## GENERAL FLOW PARAMETERS

| LOCA TION | RADIUS | VELOCITIES ABSOLUTE | MERIDNL. | TANGENTL. | TEMPERATURES TOTAL | STATIC | PRESSURES TOTAL | STATIC | MACH NUMBER | WHIRL ANGLE | SLOPE ANGLE | RAD.OF CURVTRE. | STATIC DENSITY | LOCA TION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7.7326 | 1030.035 | 814.325 | 629.149 | 734.7 | 545.4 | 6657.25 | 4251.05 | .8258 | 30.847 | 6.157 | -3.41 | .1233 | 1 |
| 2 | 7.7680 | 1014.350 | 874.950 | 521.054 | 736.7 | 550.4 | 6595.18 | 4327.12 | .8149 | 30.775 | 5.557 | -3.37 | .1248 | 2 |
| 3 | 7.8436 | 1003.414 | 852.722 | 512.398 | 738.5 | 654.7 | 6719.80 | 4406.92 | .8003 | 30.708 | 4.943 | -3.46 | .1262 | 3 |
| 4 | 7.8995 | 987.555 | 849.205 | 503.000 | 740.4 | 651.2 | 6736.40 | 4485.07 | .7849 | 30.687 | 4.369 | -3.73 | .1276 | 4 |
| 5 | 7.9559 | 973.032 | 837.749 | 497.189 | 742.4 | 663.4 | 6755.81 | 4556.95 | .7715 | 30.701 | 3.872 | -4.19 | .1288 | 5 |
| 6 | 8.0129 | 963.642 | 729.596 | 492.363 | 744.3 | 667.4 | 6790.94 | 4618.92 | .7613 | 30.719 | 3.461 | -4.94 | .1298 | 6 |
| 7 | 8.0733 | 959.042 | 824.048 | 490.023 | 747.6 | 571.0 | 6816.05 | 4668.66 | .7555 | 30.769 | 3.118 | -6.15 | .1305 | 7 |
| 8 | 8.1291 | 959.108 | 823.436 | 491.324 | 750.8 | 67.3 | 6857.45 | 4704.67 | .7538 | 30.850 | 2.814 | -8.31 | .1309 | 8 |
| 9 | 8.1581 | 963.420 | 825.150 | 495.635 | 754.6 | 677.3 | 6901.43 | 4727.45 | .7555 | 30.961 | 2.515 | -12.99 | .1309 | 9 |
| 10 | 8.2473 | 972.594 | 832.684 | 502.570 | 758.7 | 673.9 | 6953.24 | 4737.10 | .7612 | 31.113 | 2.174 | -30.23 | .1307 | 10 |
| 11 | 8.3679 | 986.376 | 842.537 | 512.539 | 763.5 | 682.5 | 7013.58 | 4735.56 | .7705 | 31.314 | 1.743 | 91.77 | .1301 | 11 |
| 12 | 8.3638 | 1000.148 | 855.066 | 525.455 | 769.2 | 685.3 | 7083.33 | 4726.00 | .7823 | 31.620 | 1.165 | 18.25 | .1293 | 12 |
| 13 | 8.4303 | 1025.146 | 853.211 | 545.100 | 776.5 | 683.0 | 7164.53 | 4713.92 | .7970 | 32.122 | -.375 | 10.25 | .1283 | 13 |
| 14 | 8.4955 | 1048.255 | 877.013 | 573.266 | 787.1 | 595.7 | 7259.43 | 4709.82 | .8110 | 33.153 | -.690 | 7.35 | .1270 | 14 |
| 15 | 8.5638 | 1075.288 | 899.438 | 604.680 | 805.0 | 703.5 | 7399.75 | 4733.00 | .8251 | 34.175 | -2.187 | 5.77 | .1253 | 15 |

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STATION 12 IS AT THE EXIT OF A BLADE ROW ROTATING AT    0.0 RPM.

| STREAM -LINE | RELATIVE GAS ANGLES GPT.IN. INLET | ANGLES OUTLET | RELATIVE VELOCITIES INLET | VELOCITIES OUTLET | RELATIVE MACH NO.S INLET | MACH NO.S OUTLET | LOSS COEFF | DE HALL NUMBER | DIFFUS FACTOR | DELTA P UPON Q | BLADE SPEEDS INLET | SPEEDS OUTLET | STREAM -LINE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 48.757 | 30.847 | 1273.041 | 1030.035 | 1.0607 | .8268 | .0606 | .809 | 0.0000 | .2503 | 0.0 | 0.0 | 1 |
| 2 | 48.024 | 30.775 | 1237.558 | 1018.350 | 1.0733 | .8149 | .0562 | .791 | 0.0000 | .2784 | 0.0 | 0.0 | 2 |
| 3 | 47.518 | 30.703 | 1296.939 | 1003.414 | 1.0814 | .8003 | .0532 | .774 | 0.0000 | .3043 | 0.0 | 0.0 | 3 |
| 4 | 47.230 | 30.597 | 1302.645 | 987.556 | 1.0860 | .7949 | .0512 | .758 | 0.0000 | .3273 | 0.0 | 0.0 | 4 |
| 5 | 47.135 | 30.701 | 1308.201 | 973.832 | 1.0873 | .7715 | .0490 | .746 | 0.0000 | .3463 | 0.0 | 0.0 | 5 |
| 6 | 47.121 | 30.719 | 1308.904 | 963.942 | 1.0885 | .7613 | .0470 | .736 | 0.0000 | .3605 | 0.0 | 0.0 | 6 |
| 7 | 47.261 | 30.769 | 1311.553 | 953.045 | 1.0887 | .7555 | .0448 | .731 | 0.0000 | .3692 | 0.0 | 0.0 | 7 |
| 8 | 47.505 | 30.350 | 1314.238 | 956.108 | 1.0895 | .7538 | .0427 | .730 | 0.0000 | .3727 | 0.0 | 0.0 | 8 |
| 9 | 47.477 | 30.951 | 1316.673 | 963.420 | 1.0877 | .7555 | .0410 | .732 | 0.0000 | .3713 | 0.0 | 0.0 | 9 |
| 10 | 48.360 | 31.113 | 1316.693 | 972.594 | 1.0863 | .7512 | .0391 | .737 | 0.0000 | .3647 | 0.0 | 0.0 | 10 |
| 11 | 49.021 | 31.314 | 1320.753 | 986.376 | 1.0833 | .7705 | .0373 | .747 | 0.0000 | .3529 | 0.0 | 0.0 | 11 |
| 12 | 49.354 | 31.520 | 1321.634 | 1006.140 | 1.0793 | .7328 | .0358 | .760 | 0.0000 | .3360 | 0.0 | 0.0 | 12 |
| 13 | 51.345 | 32.122 | 1321.770 | 1025.146 | 1.0737 | .7970 | .0343 | .776 | 0.0000 | .3149 | 0.0 | 0.0 | 13 |
| 14 | 53.697 | 33.153 | 1321.178 | 1043.255 | 1.0642 | .8110 | .0339 | .793 | 0.0000 | .2902 | 0.0 | 0.0 | 14 |
| 15 | 56.299 | 34.175 | 1320.322 | 1075.284 | 1.0469 | .8251 | .0343 | .815 | 0.0000 | .2594 | 0.0 | 0.0 | 15 |

OVERALL PERFORMANCE PARAMETERS

| STREAM -LINE | STATION-TO-STATION-PARAMETERS PRESSURE RATIO | DELTA T ON T | ISENTROPIC EFFICIENCY | INLET-TO-STATION-PARAMETERS PRESSURE RATIO | DELTA T ON T | ISENTROPIC EFFICIENCY |
|---|---|---|---|---|---|---|
| 1 | .9692 | 0.0000 | 0.0000 | 3.1461 | .4165 | .9295 |
| 2 | .9710 | 0.0000 | 0.0000 | 3.1541 | .4203 | .9265 |
| 3 | .9723 | 0.0000 | 0.0000 | 3.1757 | .4238 | .9224 |
| 4 | .9732 | 0.0000 | 0.0000 | 3.1935 | .4274 | .9170 |
| 5 | .9743 | 0.0000 | 0.0000 | 3.1927 | .4313 | .9114 |
| 6 | .9753 | 0.0000 | 0.0000 | 3.2043 | .4359 | .9052 |
| 7 | .9765 | 0.0000 | 0.0000 | 3.2212 | .4413 | .8987 |
| 8 | .9775 | 0.0000 | 0.0000 | 3.2403 | .4476 | .8915 |
| 9 | .9785 | 0.0000 | 0.0000 | 3.2615 | .4547 | .8832 |
| 10 | .9795 | 0.0000 | 0.0000 | 3.2651 | .4627 | .8744 |
| 11 | .9805 | 0.0000 | 0.0000 | 3.3145 | .4719 | .8646 |
| 12 | .9814 | 0.0000 | 0.0000 | 3.3475 | .4829 | .8532 |
| 13 | .9823 | 0.0000 | 0.0000 | 3.3859 | .4970 | .8382 |
| 14 | .9827 | 0.0000 | 0.0000 | 3.4307 | .5175 | .8153 |
| 15 | .9828 | 0.0000 | 0.0000 | 3.4971 | .5510 | .7757 |

MEAN PARAMETERS

| | STATION-TO-STATION | INLET-TO-STATION |
|---|---|---|
| PRESSURE RATIO | .9778 | 3.2782 |
| DELTA T ON T | 0.0000 | .4612 |
| ISEN. EFFICY. | 0.0000 | .8751 |

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## STATION 13

### GENERAL FLOW PARAMETERS

| LOCA TION | RADIUS | VELOCITIES ABSOLUTE | VELOCITIES MERIDNL. | VELOCITIES TANGENL. | TEMPERATURES TOTAL | TEMPERATURES STATIC | PRESSURES TOTAL | PRESSURES STATIC | MACH NUMBER | WHIRL ANGLE | SLOPE ANGLE | RAD.OF CURVTRE. | STATIC DENSITY | LOCA TION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1  | 7.7467 | 779.329 | 7-1.214 | 240.741 | 734.7 | 684.2 | 6445.69 | 5021.84 | .6080 | 17.993 | -1.289 | -5.76 | .137 | 1 |
| 2  | 7.7974 | 774.118 | 736.685 | 237.803 | 736.7 | 685.9 | 6493.95 | 5080.46 | .6028 | 17.891 | -1.151 | -7.00 | .1387 | 2 |
| 3  | 7.8500 | 767.508 | 751.173 | 234.653 | 738.5 | 689.5 | 6526.42 | 5129.76 | .5958 | 17.793 | -.951 | -8.68 | .1395 | 3 |
| 4  | 7.9045 | 762.239 | 729.055 | 232.038 | 740.4 | 692.0 | 6549.65 | 5170.08 | .5913 | 17.723 | -.579 | -10.30 | .1401 | 4 |
| 5  | 7.9612 | 759.546 | 723.698 | 233.621 | 742.4 | 694.4 | 6574.37 | 5201.99 | .5882 | 17.676 | -.348 | -13.70 | .1405 | 5 |
| 6  | 9.0193 | 761.495 | 725.695 | 230.745 | 744.8 | 695.5 | 6604.10 | 5225.24 | .5883 | 17.639 | .017 | -16.95 | .1407 | 6 |
| 7  | 8.0789 | 767.215 | 731.734 | 232.513 | 747.6 | 698.5 | 6650.90 | 5243.74 | .5928 | 17.627 | .384 | -20.23 | .1408 | 7 |
| 8  | 8.1392 | 777.267 | 740.707 | 235.578 | 750.8 | 700.6 | 6699.15 | 5255.33 | .5993 | 17.643 | .727 | -23.08 | .1407 | 8 |
| 9  | 8.2001 | 738.599 | 751.418 | 239.616 | 754.6 | 702.8 | 6749.31 | 5262.12 | .6071 | 17.687 | 1.031 | -25.32 | .1404 | 9 |
| 10 | 8.2616 | 803.105 | 754.308 | 243.045 | 758.7 | 705.0 | 6807.14 | 5264.59 | .6172 | 17.766 | 1.279 | -27.43 | .1400 | 10 |
| 11 | 8.3231 | 820.508 | 780.836 | 251.955 | 763.5 | 707.5 | 6873.43 | 5263.28 | .6295 | 17.863 | 1.452 | -30.35 | .1395 | 11 |
| 12 | 8.3845 | 841.262 | 793.774 | 258.929 | 769.2 | 710.3 | 6950.66 | 5258.56 | .6442 | 18.069 | 1.526 | -36.03 | .1388 | 12 |
| 13 | 8.4450 | 864.997 | 820.928 | 272.574 | 775.5 | 714.2 | 7036.23 | 5250.59 | .6605 | 18.368 | 1.477 | -52.72 | .1379 | 13 |
| 14 | 8.5075 | 892.911 | 844.550 | 289.872 | 787.1 | 720.8 | 7132.37 | 5239.61 | .6787 | 18.944 | 1.260 | -240.80 | .1363 | 14 |
| 15 | 8.5692 | 932.099 | 876.480 | 311.673 | 805.0 | 732.7 | 7270.26 | 5228.86 | .7027 | 19.528 | .825 | 59.85 | .1338 | 15 |

STATION 13 IS AT THE EXIT OF A BLADE ROW ROTATING AT 0.0 RPM.

| STREAM -LINE | RELATIVE GAS ANGLES OPT.IN.INLET | RELATIVE GAS ANGLES OUTLET | RELATIVE VELOCITIES INLET | RELATIVE VELOCITIES OUTLET | RELATIVE MACH NO.S INLET | MACH NO.S OUTLET | LOSS COEFF | DE HALL NUMBER | DIFFUS FACTOR | DELTA P UPON Q | BLADE SPEEDS INLET | BLADE SPEEDS OUTLET | STREAM -LINE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1  | 30.347 | 17.993 | 1030.035 | 779.329 | .8268 | .6080 | .1211 | .757 | 0.0000 | .3205 | 0.0 | 0.0 | 1 |
| 2  | 30.775 | 17.891 | 1018.350 | 774.118 | .8149 | .6028 | .1127 | .760 | 0.0000 | .3182 | 0.0 | 0.0 | 2 |
| 3  | 30.705 | 17.793 | 1003.414 | 767.909 | .8003 | .5968 | .1069 | .765 | 0.0000 | .3126 | 0.0 | 0.0 | 3 |
| 4  | 30.587 | 17.723 | 987.556 | 762.239 | .7849 | .5913 | .1027 | .772 | 0.0000 | .3044 | 0.0 | 0.0 | 4 |
| 5  | 30.701 | 17.676 | 973.632 | 759.546 | .7715 | .5882 | .0989 | .780 | 0.0000 | .2935 | 0.0 | 0.0 | 5 |
| 6  | 30.719 | 17.638 | 953.942 | 761.496 | .7613 | .5888 | .0944 | .790 | 0.0000 | .2810 | 0.0 | 0.0 | 6 |
| 7  | 30.769 | 17.627 | 959.045 | 767.815 | .7555 | .5928 | .0898 | .801 | 0.0000 | .2679 | 0.0 | 0.0 | 7 |
| 8  | 30.350 | 17.543 | 959.106 | 77.267 | .7533 | .5993 | .0857 | .810 | 0.0000 | .2558 | 0.0 | 0.0 | 8 |
| 9  | 30.361 | 17.637 | 953.420 | 788.596 | .7555 | .5071 | .0821 | .819 | 0.0000 | .2460 | 0.0 | 0.0 | 9 |
| 10 | 31.113 | 17.760 | 972.524 | 803.106 | .7612 | .6172 | .0785 | .826 | 0.0000 | .2381 | 0.0 | 0.0 | 10 |
| 11 | 31.314 | 17.443 | 946.376 | 820.508 | .7705 | .6295 | .0748 | .832 | 0.0000 | .2317 | 0.0 | 0.0 | 11 |
| 12 | 31.620 | 18.069 | 1034.140 | 841.262 | .7323 | .6442 | .0712 | .838 | 0.0000 | .2260 | 0.0 | 0.0 | 12 |
| 13 | 32.122 | 19.358 | 1025.146 | 864.997 | .7970 | .6505 | .0684 | .844 | 0.0000 | .2191 | 0.0 | 0.0 | 13 |
| 14 | 33.153 | 18.344 | 1048.255 | 892.911 | .8110 | .5787 | .0676 | .852 | 0.0000 | .2079 | 0.0 | 0.0 | 14 |
| 15 | 34.175 | 19.526 | 1075.293 | 932.098 | .8251 | .7027 | .0686 | .866 | 0.0000 | .1860 | 0.0 | 0.0 | 15 |

## OVERALL PERFORMANCE PARAMETERS

| | STATION-TO-STATION | INLET-TO-STATION |
|---|---|---|
| PRESSURE RATIO | .9771 | 3.2836 |
| DELTA T ON T | 0.0000 | .4612 |
| ISEN. EFFICY. | 0.0000 | .8551 |

| STREAM-LINE | STATION-TO-STATION-PARAMETERS | | | INLET-TO-STATION-PARAMETERS | | | MEAN PARAMETERS | | |
|---|---|---|---|---|---|---|---|---|---|
| | PRESSURE RATIO | DELTA T ON T | ISENTROPIC EFFICIENCY | PRESSURE RATIO | DELTA T ON T | ISENTROPIC EFFICIENCY | PRESSURE RATIO | DELTA T ON T | ISEN. EFFICY. |
| 1 | .9682 | 0.0000 | 0.0000 | 3.0462 | .4165 | .8992 | | | |
| 2 | .9699 | 0.0000 | 0.0000 | 3.0690 | .4203 | .8979 | | | |
| 3 | .9712 | 0.0000 | 0.0000 | 3.0843 | .4238 | .8952 | | | |
| 4 | .9723 | 0.0000 | 0.0000 | 3.0953 | .4276 | .8910 | | | |
| 5 | .9731 | 0.0000 | 0.0000 | 3.1070 | .4313 | .8864 | | | |
| 6 | .9745 | 0.0000 | 0.0000 | 3.1229 | .4359 | .8817 | | | |
| 7 | .9754 | 0.0000 | 0.0000 | 3.1431 | .4413 | .8765 | | | |
| 8 | .9769 | 0.0000 | 0.0000 | 3.1659 | .4476 | .8704 | | | |
| 9 | .9780 | 0.0100 | 0.0000 | 3.1397 | .4547 | .8636 | | | |
| 10 | .9790 | 0.0000 | 0.0000 | 3.2170 | .4627 | .8561 | | | |
| 11 | .9300 | 0.0000 | 0.0000 | 3.2483 | .4719 | .8475 | | | |
| 12 | .9313 | 0.0000 | 0.0000 | 3.2341 | .4829 | .8374 | | | |
| 13 | .9421 | 0.0000 | 0.0000 | 3.3252 | .4970 | .8236 | | | |
| 14 | .9525 | 0.0000 | 0.0000 | 3.3707 | .5175 | .8015 | | | |
| 15 | .9525 | 0.0000 | 0.0000 | 3.4331 | .5519 | .7657 | | | |

## STATION 14

## GENERAL FLOW PARAMETERS

| LOCATION | RADIUS | VELOCITIES | | | TEMPERATURES | | PRESSURES | | MACH NUMBER | WHIRL ANGLE | SLOPE ANGLE | RAD.OF CURVTRE. | STATIC DENSITY | LOCATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ABSOLUTE | MERIDNL. | TANGENTL. | TOTAL | STATIC | TOTAL | STATIC | | | | | | |
| 1 | 7.7077 | 588.792 | 585.065 | 66.130 | 734.7 | 705.9 | 5236.82 | 5418.67 | .4523 | 6.449 | -3.353 | 23.30 | .1448 | 1 |
| 2 | 7.7663 | 606.048 | 602.357 | 65.773 | 736.7 | 706.2 | 6294.20 | 5426.10 | .4654 | 6.326 | -2.679 | 22.50 | .1441 | 2 |
| 3 | 7.8263 | 617.590 | 613.905 | 66.784 | 738.5 | 705.8 | 6334.59 | 5431.24 | .4741 | 6.208 | -2.003 | 23.56 | .1441 | 3 |
| 4 | 7.8673 | 626.336 | 622.736 | 66.593 | 740.4 | 707.7 | 6354.50 | 5434.64 | .4305 | 6.103 | -1.429 | 26.16 | .1440 | 4 |
| 5 | 7.9501 | 635.953 | 632.455 | 56.611 | 742.4 | 703.7 | 6395.90 | 5436.66 | .4875 | 6.012 | -.898 | 38.67 | .1439 | 5 |
| 6 | 8.0131 | 648.564 | 645.037 | 57.005 | 744.8 | 709.8 | 6436.18 | 5437.54 | .4968 | 5.935 | -.423 | 38.47 | .1437 | 6 |
| 7 | 8.0767 | 664.313 | 660.825 | 58.036 | 747.5 | 710.9 | 6486.54 | 5437.51 | .5005 | 5.878 | -.013 | 52.16 | .1435 | 7 |
| 8 | 8.1404 | 681.198 | 677.656 | 63.376 | 750.8 | 712.2 | 6541.00 | 5436.66 | .5209 | 5.845 | -.329 | 78.64 | .1432 | 8 |
| 9 | 8.2041 | 698.979 | 695.353 | 71.100 | 754.6 | 713.9 | 5598.73 | 5435.04 | .5339 | 5.838 | .608 | 145.19 | .1428 | 9 |
| 10 | 8.2677 | 718.136 | 714.313 | 73.326 | 758.7 | 715.8 | 6661.83 | 5432.73 | .5475 | 5.861 | .627 | 512.80 | .1424 | 10 |
| 11 | 8.3310 | 739.954 | 735.016 | 76.240 | 763.5 | 717.9 | 6735.64 | 5429.74 | .5635 | 5.914 | .987 | -554.10 | .1418 | 11 |
| 12 | 8.3939 | 764.041 | 759.347 | 79.945 | 769.2 | 720.6 | 6319.70 | 5425.d7 | .5808 | 6.006 | 1.086 | -235.81 | .1612 | 12 |
| 13 | 8.4552 | 790.047 | 785.504 | 84.608 | 776.5 | 724.6 | 6938.62 | 5421.00 | .5990 | 6.149 | 1.127 | -182.64 | .1403 | 13 |
| 14 | 8.5132 | 818.713 | 813.651 | 90.355 | 787.1 | 731.3 | 7004.57 | 5414.76 | .6179 | 6.378 | 1.114 | -183.46 | .1369 | 14 |
| 15 | 8.5737 | 859.027 | 853.268 | 99.303 | 805.0 | 743.5 | 7140.75 | 5405.03 | .6429 | 6.638 | 1.032 | -277.54 | .1364 | 15 |

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STATION 14 IS AT THE EXIT OF A BLADE ROW ROTATING AT    0.0 RPM.

| STREAM -LINE | RELATIVE GAS ANGLE OPT.IN.INLET | OUTLET | RELATIVE VELOCITIES INLET | OUTLET | RELATIVE MACH NO.S INLET | OUTLET | LOSS COEFF | DE HALL NUMBER | DIFFUS FACTOR | DELTA P UPON Q | BLADE SPEEDS INLET | OUTLET | STREAM -LINE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 17.993 | 5.449 | 779.329 | 588.792 | .6080 | .4523 | .1815 | .756 | 0.0000 | .2787 | 0.0 | 0.0 | 1 |
| 2 | 17.391 | 5.372 | 774.119 | 605.048 | .6023 | .4554 | .1688 | .783 | 0.0000 | .2445 | 0.0 | 0.0 | 2 |
| 3 | 17.793 | 6.204 | 757.903 | 617.630 | .5963 | .4741 | .1601 | .804 | 0.0000 | .2159 | 0.0 | 0.0 | 3 |
| 4 | 17.723 | 6.105 | 752.239 | 626.335 | .5913 | .4805 | .1538 | .822 | 0.0000 | .1918 | 0.0 | 0.0 | 4 |
| 5 | 17.676 | 5.012 | 759.545 | 635.253 | .5882 | .4375 | .1479 | .837 | 0.0000 | .1710 | 0.0 | 0.0 | 5 |
| 6 | 17.639 | 5.035 | 761.496 | 648.564 | .5884 | .4968 | .1415 | .852 | 0.0000 | .1529 | 0.0 | 0.0 | 6 |
| 7 | 17.627 | 5.076 | 757.412 | 664.318 | .5923 | .5085 | .1345 | .855 | 0.0000 | .1377 | 0.0 | 0.0 | 7 |
| 8 | 17.643 | 5.345 | 777.267 | 681.198 | .5993 | .5209 | .1286 | .876 | 0.0000 | .1256 | 0.0 | 0.0 | 8 |
| 9 | 17.687 | 5.332 | 738.593 | 698.379 | .6071 | .5339 | .1229 | .886 | 0.0000 | .1163 | 0.0 | 0.0 | 9 |
| 10 | 17.756 | 5.661 | 803.106 | 718.136 | .6172 | .5478 | .1175 | .894 | 0.0000 | .1090 | 0.0 | 0.0 | 10 |
| 11 | 17.333 | 5.914 | 820.502 | 739.354 | .6295 | .5636 | .1117 | .902 | 0.0000 | .1034 | 0.0 | 0.0 | 11 |
| 12 | 18.069 | 5.000 | 841.262 | 764.041 | .6442 | .5903 | .1063 | .909 | 0.0000 | .0989 | 0.0 | 0.0 | 12 |
| 13 | 18.368 | 6.147 | 854.997 | 790.047 | .6505 | .5990 | .1023 | .913 | 0.0000 | .0954 | 0.0 | 0.0 | 13 |
| 14 | 18.344 | 5.375 | 832.911 | 818.719 | .6787 | .6178 | .1015 | .917 | 0.0000 | .0925 | 0.0 | 0.0 | 14 |
| 15 | 19.528 | 6.538 | 832.098 | 859.027 | .7027 | .6429 | .1029 | .922 | 0.0000 | .0878 | 0.0 | 0.0 | 15 |

OVERALL PERFORMANCE PARAMETERS

| STREAM -LINE | STATION-TO-STATION-PARAMETERS PRESSURE RATIO | DELTA T ON T | ISENTROPIC EFFICIENCY | INLET-TO-STATION-PARAMETERS PRESSURE RATIO | DELTA T ON T | ISENTROPIC EFFICIENCY |
|---|---|---|---|---|---|---|
| 1 | .9673 | 0.0000 | 0.0000 | 2.9465 | .4165 | .8680 |
| 2 | .9692 | 0.0000 | 0.0000 | 2.9746 | .4203 | .8588 |
| 3 | .9705 | 0.0000 | 0.0000 | 2.9937 | .4238 | .8675 |
| 4 | .9717 | 0.0000 | 0.0000 | 3.0073 | .4274 | .8646 |
| 5 | .9729 | 0.0000 | 0.0000 | 3.0225 | .4313 | .8613 |
| 6 | .9740 | 0.0000 | 0.0000 | 3.0417 | .4359 | .8579 |
| 7 | .9753 | 0.0000 | 0.0000 | 3.0655 | .4413 | .8542 |
| 8 | .9764 | 0.0000 | 0.0000 | 3.0912 | .4475 | .8496 |
| 9 | .9777 | 0.0000 | 0.0000 | 3.1135 | .4547 | .8439 |
| 10 | .9787 | 0.0000 | 0.0000 | 3.1493 | .4627 | .8375 |
| 11 | .9799 | 0.0000 | 0.0000 | 3.1832 | .4719 | .8304 |
| 12 | .9810 | 0.0000 | 0.0000 | 3.2224 | .4829 | .8215 |
| 13 | .9319 | 0.0000 | 0.0000 | 3.2649 | .4970 | .8088 |
| 14 | .9321 | 0.0000 | 0.0000 | 3.3103 | .5175 | .7874 |
| 15 | .9322 | 0.0000 | 0.0000 | 3.3745 | .5519 | .7525 |

| MEAN PARAMETERS | STATION-TO-STATION | INLET-TO-STATION |
|---|---|---|
| PRESSURE RATIO | .9767 | 3.1296 |
| DELTA T ON T | 0.0000 | .4612 |
| ISEN. EFFICY. | 0.0000 | .8350 |

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## GENERAL FLOW PARAMETERS

| LOCA-TION | RADIUS | VELOCITIES ABSOLUTE | VELOCITIES MERIDNL. | VELOCITIES TANGNTL. | TEMPERATURES TOTAL | TEMPERATURES STATIC | PRESSURES TOTAL | PRESSURES STATIC | MACH NUMBER | WHIRL ANGLE | SLOPE ANGLE | RAD.OF CURVTRE. | STATIC DENSITY | LOCA-TION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7.5819 | 493.595 | 493.535 | 0.000 | 734.7 | 714.4 | 6021.88 | 5459.68 | .3768 | 0.000 | -1.469 | 13.17 | .1433 | 1 |
| 2 | 7.7486 | 525.169 | 525.139 | 0.000 | 736.7 | 713.8 | 6093.63 | 5454.25 | .4012 | 0.000 | -1.102 | 17.57 | .1433 | 2 |
| 3 | 7.8144 | 546.204 | 546.204 | 0.000 | 738.5 | 713.7 | 6143.27 | 5449.87 | .4172 | 0.000 | -.789 | 24.19 | .1432 | 3 |
| 4 | 7.8802 | 561.132 | 561.132 | 0.000 | 740.4 | 714.2 | 6179.17 | 5446.56 | .4285 | -.100 | -.505 | 36.10 | .1430 | 4 |
| 5 | 7.9462 | 576.264 | 575.264 | 0.000 | 742.4 | 714.8 | 6217.90 | 5444.31 | .4399 | 0.000 | -.243 | 54.57 | .1429 | 5 |
| 6 | 8.0124 | 593.815 | 593.815 | 0.000 | 744.8 | 713.4 | 6266.02 | 5443.14 | .4530 | 0.000 | -.011 | 206.09 | .1427 | 6 |
| 7 | 8.0755 | 613.354 | 613.354 | 0.000 | 747.6 | 716.3 | 6322.79 | 5443.02 | .4677 | 0.000 | .186 | -236.85 | .1425 | 7 |
| 8 | 8.1461 | 633.423 | 633.423 | 0.000 | 750.8 | 717.5 | 6334.04 | 5443.88 | .4826 | 0.000 | .348 | -84.78 | .1423 | 8 |
| 9 | 8.2094 | 653.445 | 653.445 | 0.000 | 754.6 | 719.0 | 6447.93 | 5445.63 | .4973 | 0.000 | .474 | -55.79 | .1428 | 9 |
| 10 | 8.2744 | 674.266 | 574.256 | 0.000 | 758.7 | 720.8 | 6517.21 | 5448.20 | .5125 | 0.000 | .566 | -43.95 | .1417 | 10 |
| 11 | 8.3357 | 697.123 | 697.123 | 0.000 | 763.5 | 723.0 | 6596.29 | 5451.48 | .5291 | 0.000 | .624 | -38.83 | .1414 | 11 |
| 12 | 8.4023 | 722.176 | 722.176 | 0.000 | 769.2 | 725.8 | 6635.93 | 5455.36 | .5470 | 0.000 | .648 | -35.13 | .1410 | 12 |
| 13 | 8.4652 | 748.102 | 748.102 | 0.000 | 776.5 | 723.9 | 6790.30 | 5459.68 | .5651 | 0.000 | .639 | -34.88 | .1403 | 13 |
| 14 | 8.5275 | 775.412 | 775.412 | 0.000 | 787.1 | 737.1 | 6877.52 | 5464.26 | .5825 | 0.000 | .602 | -34.32 | .1390 | 14 |
| 15 | 8.5891 | 813.826 | 813.826 | 0.000 | 805.0 | 749.8 | 7011.25 | 5469.02 | .6065 | 0.000 | .536 | -36.07 | .1368 | 15 |

STATION 15 IS AT THE EXIT OF A BLADE ROW ROTATING AT 0.0 RPM.

| STREAM-LINE | RELATIVE GAS ANGLES OPT.IN. INLET | RELATIVE GAS ANGLES INLET | RELATIVE GAS ANGLES OUTLET | RELATIVE VELOCITIES INLET | RELATIVE VELOCITIES OUTLET | RELATIVE MACH NO.S INLET | RELATIVE MACH NO.S OUTLET | LOSS COEFF | DE HALL NUMBER | DIFFUS FACTOR | DELTA P UPON Q | BLADE SPEEDS INLET | BLADE SPEEDS OUTLET | STREAM-LINE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6.449 | 0.003 | 0.003 | 586.792 | 493.535 | .4523 | .3768 | .2425 | .838 | 0.0000 | .0503 | 0.0 | 0.0 | 1 |
| 2 | 6.326 | 0.003 | 0.003 | 606.043 | 525.169 | .4654 | .4012 | .2252 | .867 | 0.0000 | .0324 | 0.0 | 0.0 | 2 |
| 3 | 6.208 | 0.000 | 0.000 | 617.570 | 546.204 | .4741 | .4172 | .2133 | .894 | 0.0000 | .0206 | 0.0 | 0.0 | 3 |
| 4 | 6.103 | 0.000 | 0.000 | 626.336 | 561.132 | .4805 | .4285 | .2050 | .896 | 0.0000 | .0128 | 0.0 | 0.0 | 4 |
| 5 | 6.012 | 0.000 | 0.000 | 635.953 | 576.264 | .4875 | .4399 | .1963 | .906 | 0.0000 | .0080 | 0.0 | 0.0 | 5 |
| 6 | 5.935 | 0.000 | 0.000 | 643.564 | 593.315 | .4968 | .4530 | .1881 | .916 | 0.0000 | .0056 | 0.0 | 0.0 | 6 |
| 7 | 5.378 | 0.000 | 0.000 | 654.319 | 613.354 | .5083 | .4677 | .1794 | .923 | 0.0000 | .0053 | 0.0 | 0.0 | 7 |
| 8 | 5.345 | 0.000 | 0.000 | 661.198 | 633.423 | .5209 | .4826 | .1712 | .930 | 0.0000 | .0065 | 0.0 | 0.0 | 8 |
| 9 | 5.333 | 0.000 | 0.000 | 693.979 | 653.445 | .5339 | .4973 | .1636 | .935 | 0.0000 | .0091 | 0.0 | 0.0 | 9 |
| 10 | 5.361 | 0.000 | 0.000 | 718.136 | 674.256 | .5478 | .5125 | .1565 | .939 | 0.0000 | .0125 | 0.0 | 0.0 | 10 |
| 11 | 5.314 | 0.000 | 0.000 | 739.054 | 697.123 | .5636 | .5291 | .1499 | .942 | 0.0000 | .0166 | 0.0 | 0.0 | 11 |
| 12 | 6.006 | 0.000 | 0.000 | 764.041 | 722.176 | .5803 | .5470 | .1417 | .945 | 0.0000 | .0212 | 0.0 | 0.0 | 12 |
| 13 | 5.148 | 0.000 | 0.000 | 790.047 | 748.102 | .5990 | .5651 | .1364 | .947 | 0.0000 | .0260 | 0.0 | 0.0 | 13 |
| 14 | 6.373 | 0.000 | 0.000 | 818.719 | 775.412 | .6173 | .5828 | .1351 | .947 | 0.0000 | .0311 | 0.0 | 0.0 | 14 |
| 15 | 6.538 | 0.000 | 0.000 | 859.027 | 813.826 | .6423 | .6065 | .1372 | .947 | 0.0000 | .0352 | 0.0 | 0.0 | 15 |

## OVERALL PERFORMANCE PARAMETERS

| | MEAN PARAMETERS | PRESSURE RATIO | DELTA T ON T | ISEN. EFFIC. |
|---|---|---|---|---|
| STATION-TO-STATION | | .9762 | 0.0000 | 0.0000 |
| INLET-TO-STATION | | 3.0555 | .4612 | .8145 |

| STREAM-LINE | STATION-TO-STATION-PARAMETERS PRESSURE RATIO | DELTA T ON T | ISENTROPIC EFFICIENCY | INLET-TO-STATION-PARAMETERS PRESSURE RATIO | DELTA T ON T | ISENTROPIC EFFICIENCY |
|---|---|---|---|---|---|---|
| 1 | .9658 | 0.0000 | 0.0000 | 2.8453 | .4165 | .8357 |
| 2 | .9681 | 0.0000 | 0.0000 | 2.8738 | .4203 | .8363 |
| 3 | .9699 | 0.0000 | 0.0000 | 2.9032 | .4238 | .8394 |
| 4 | .9709 | 0.0000 | 0.0000 | 2.9202 | .4274 | .8377 |
| 5 | .9722 | 0.0000 | 0.0000 | 2.9355 | .4313 | .8358 |
| 6 | .9735 | 0.0400 | 0.0000 | 2.9611 | .4359 | .8339 |
| 7 | .9747 | 0.0000 | 0.0000 | 2.9891 | .4413 | .8315 |
| 8 | .9750 | 0.0000 | 0.0000 | 3.0171 | .4476 | .8283 |
| 9 | .9772 | 0.0000 | 0.0000 | 3.0472 | .4547 | .8239 |
| 10 | .9783 | 0.0000 | 0.0000 | 3.0803 | .4627 | .8188 |
| 11 | .9793 | 0.0000 | 0.0000 | 3.1173 | .4719 | .8129 |
| 12 | .9805 | 0.0000 | 0.0000 | 3.1597 | .4825 | .8054 |
| 13 | .9814 | 0.0000 | 0.0000 | 3.2043 | .4970 | .7937 |
| 14 | .9819 | 0.0000 | 0.0000 | 3.2502 | .5175 | .7733 |
| 15 | .9819 | 0.0000 | 0.0000 | 3.3134 | .5519 | .7391 |

## STATION 16
**********

## GENERAL FLOW PARAMETERS

| LOCATION | RADIUS | VELOCITIES ABSOLUTE | MERIDNL. | TANGENTL. | TEMPERATURES TOTAL | STATIC | PRESSURES TOTAL | STATIC | MACH NUMBER | WHIRL ANGLE | SLOPE ANGLE | RAD.OF CURVTRE. | STATIC DENSITY | LOCATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7.6819 | 488.928 | 488.928 | 0.000 | 734.7 | 714.8 | 5021.83 | 5459.91 | .3732 | 0.000 | .000 | 61999.99 | .1435 | 1 |
| 2 | 7.7426 | 513.464 | 513.464 | 0.000 | 736.7 | 714.7 | 5043.58 | 5459.90 | .3953 | 0.000 | .001 | *1480.15 | .1436 | 2 |
| 3 | 7.8146 | 537.313 | 537.913 | 0.000 | 738.5 | 714.5 | 5143.27 | 5469.90 | .4107 | 0.000 | .012 | -3051.61 | .1436 | 3 |
| 4 | 7.8806 | 551.702 | 551.702 | 0.000 | 740.4 | 715.0 | 6179.17 | 5469.91 | .4210 | 0.000 | .030 | -3102.46 | .1435 | 4 |
| 5 | 7.9473 | 565.174 | 565.174 | 0.000 | 742.4 | 715.7 | 6217.90 | 5469.94 | .4319 | 0.000 | .052 | -1795.65 | .1433 | 5 |
| 6 | 8.0134 | 583.545 | 583.545 | 0.000 | 744.8 | 715.4 | 6256.02 | 5470.00 | .4449 | 0.000 | .074 | -1258.41 | .1432 | 6 |
| 7 | 8.0798 | 603.323 | 603.329 | 0.000 | 747.5 | 717.3 | 6322.79 | 5470.03 | .4597 | 0.000 | .091 | -1010.91 | .1430 | 7 |
| 8 | 8.1456 | 623.975 | 623.975 | 0.000 | 750.8 | 718.4 | 6384.03 | 5470.20 | .4751 | 0.000 | .104 | -892.30 | .1428 | 8 |
| 9 | 8.2110 | 644.344 | 644.344 | 0.000 | 754.5 | 713.9 | 5447.93 | 5470.32 | .4904 | 0.000 | 0.000 | -845.21 | .1425 | 9 |
| 10 | 8.2759 | 666.741 | 666.741 | 0.000 | 759.7 | 721.7 | 6517.21 | 5470.47 | .5065 | 0.000 | .108 | -857.04 | .1422 | 10 |
| 11 | 8.3401 | 590.562 | 690.562 | 0.000 | 763.5 | 723.8 | 6596.23 | 5470.61 | .5240 | 0.000 | .099 | -934.41 | .1418 | 11 |
| 12 | 9.4035 | 717.304 | 717.304 | 0.000 | 769.2 | 720.4 | 5685.99 | 5470.74 | .5431 | 0.000 | .083 | -1110.32 | .1413 | 12 |
| 13 | 8.4661 | 744.670 | 744.670 | 0.000 | 776.5 | 730.4 | 6730.30 | 5470.86 | .5623 | 0.000 | .060 | -1512.94 | .1405 | 13 |
| 14 | 8.5280 | 773.419 | 773.413 | 0.000 | 787.1 | 737.4 | 6977.52 | 5470.93 | .5812 | 0.000 | .032 | -2765.48 | .1392 | 14 |
| 15 | 8.5891 | 813.262 | 813.262 | 0.000 | 805.0 | 743.9 | 7011.25 | 5470.97 | .6050 | 0.000 | -.000 | *2000.03 | .1368 | 15 |

STATION 17
*********

## GENERAL FLOW PARAMETERS

| LOCATION | RADIUS | VELOCITIES ABSOLUTE | MERIDNL. | TANGENTL. | TEMPERATURES TOTAL | STATIC | PRESSURES TOTAL | STATIC | MACH NUMBER | WHIRL ANGLE | SLOPE ANGLE | RAD.OF CURVTRE. | STATIC DENSITY | LOCATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7.6820 | 488.994 | 483.994 | 0.000 | 734.8 | 714.8 | 5021.88 | 5469.76 | .3732 | 0.000 | .004 | 0.00 | .1435 | 1 |
| 2 | 7.7437 | 518.527 | 518.527 | 0.000 | 736.4 | 714.4 | 6003.63 | 5469.76 | .3959 | 0.000 | .003 | 0.00 | .1436 | 2 |
| 3 | 7.8147 | 537.976 | 537.976 | 0.000 | 738.5 | 714.4 | 6143.27 | 5469.75 | .4107 | 0.000 | .003 | 0.00 | .1436 | 3 |
| 4 | 7.8807 | 551.772 | 551.772 | 0.000 | 740.4 | 715.0 | 6179.17 | 5469.75 | ./211 | 0.000 | .002 | 0.00 | .1435 | 4 |
| 5 | 7.9470 | 566.257 | 566.257 | 0.000 | 742.4 | 715.7 | 6217.90 | 5469.73 | .4313 | 0.000 | .002 | 0.00 | .1433 | 5 |
| 6 | 8.0135 | 583.653 | 583.653 | 0.000 | 744.5 | 715.4 | 6256.02 | 5469.72 | .4450 | 0.000 | .002 | 0.00 | .1432 | 6 |
| 7 | 8.0798 | 603.467 | 603.467 | 0.000 | 747.6 | 717.3 | 6322.73 | 5469.71 | .4595 | 0.000 | .001 | 0.70 | .1430 | 7 |
| 8 | 8.1456 | 624.151 | 624.151 | 0.000 | 750.8 | 718.4 | 6384.03 | 5469.71 | .4752 | 0.000 | .001 | 0.00 | .1428 | 8 |
| 9 | 8.2110 | 645.062 | 645.062 | 0.000 | 754.6 | 719.9 | 6447.93 | 5469.70 | .4906 | 0.000 | -.000 | 0.00 | .1425 | 9 |
| 10 | 8.2759 | 667.002 | 667.002 | 0.000 | 758.7 | 721.7 | 6517.21 | 5469.69 | .5067 | 0.000 | -.000 | 0.00 | .1421 | 10 |
| 11 | 8.3401 | 691.163 | 691.163 | 0.000 | 763.5 | 723.7 | 6596.29 | 5469.69 | .5243 | 0.000 | -.001 | 0.00 | .1417 | 11 |
| 12 | 8.4034 | 717.639 | 717.639 | 0.000 | 769.2 | 726.3 | 6645.99 | 5469.69 | .543+ | 0.000 | -.002 | 0.00 | .1412 | 12 |
| 13 | 8.4660 | 745.029 | 745.029 | 0.000 | 773.5 | 730.3 | 6730.30 | 5469.69 | .5625 | 0.000 | -.002 | 0.00 | .1405 | 13 |
| 14 | 8.5279 | 773.792 | 773.792 | 0.000 | 787.1 | 737.3 | 6877.52 | 5469.69 | .5815 | 0.000 | -.003 | 0.60 | .1391 | 14 |
| 15 | 8.5890 | 813.631 | 813.631 | 0.000 | 805.0 | 743.9 | 7011.25 | 5469.69 | .6063 | 0.000 | -.004 | 0.00 | .1368 | 15 |

## OVERALL PERFORMANCE PARAMETERS

| MEAN PARAMETERS | STATION-TO-STATION |
|---|---|
| PRESSURE RATIO | 3.0555 |
| DELTA T ON T | .4612 |
| ISEN. EFFICY. | .8145 |

| STATION-TO-STATION | INLET-TO-STATION |
|---|---|
| 1.0000 | 3.0555 |
| 0.0000 | .4612 |
| 0.0000 | .8145 |

| STREAMLINE | INLET-TO-STATION PRESSURE RATIO | DELTA T ON T | ISENTROPIC EFFICIENCY | STATION-TO-STATION PRESSURE RATIO | DELTA T ON T | ISENTROPIC EFFICIENCY |
|---|---|---|---|---|---|---|
| 1 | 2.8459 | .4165 | .9357 | 1.0000 | 0.0000 | 0.0000 |
| 2 | 2.8793 | .4203 | .8369 | 1.0000 | 0.0000 | 0.0000 |
| 3 | 2.9032 | .4238 | .8394 | 1.0000 | 0.0000 | 0.0000 |
| 4 | 2.9202 | .4274 | .8377 | 1.0000 | 0.0000 | 0.0000 |
| 5 | 2.9335 | .4313 | .8358 | 1.0000 | 0.0000 | 0.0000 |
| 6 | 2.9613 | .4359 | .9339 | 1.0000 | 0.0000 | 0.0000 |
| 7 | 2.9931 | .4413 | .8315 | 1.0000 | 0.0000 | 0.0000 |
| 8 | 3.0171 | .4476 | .8283 | 1.0000 | 0.0000 | 0.0000 |
| 9 | 3.0472 | .4547 | .5239 | 1.0000 | 0.0000 | 0.0000 |
| 10 | 3.0800 | .4627 | .8135 | 1.0000 | 0.0000 | 0.0000 |
| 11 | 3.1173 | .4719 | .8128 | 1.0000 | 0.0000 | 0.0000 |
| 12 | 3.1597 | .4829 | .8054 | 1.0000 | 0.0000 | 0.0000 |
| 13 | 3.2043 | .4970 | .7937 | 1.0000 | 0.0000 | 0.0000 |
| 14 | 3.2502 | .5175 | .7733 | 1.0000 | 0.0000 | 0.0000 |
| 15 | 3.3134 | .5519 | .7391 | 1.0000 | 0.0000 | 0.0000 |

# SECTION V

## REVISED ROTOR GEOMETRY

### 1. GENERAL CHARACTERISTICS

Since the principal purpose of this redesign was to incorporate splitter vanes into the compressor rotor, making as few other changes as possible and practical, many of the general characteristics of the original rotor were adopted without change. These unchanged characteristics included the design speed, number of principal blades, the type of camber line, the section thickness distributions, and the geometry of the blade/platform fillet.

The airfoil sections were defined on 15 streamsurfaces (not tangent cones), and stacked close to the centroids of the manufacturing sections on Cartesian planes. Some of the streamsurface sections were shifted slightly in the meridional direction away from centroid stacking in order to cause the rotor leading and trailing edges to lie in radial planes. This was done for convenience since the stress penalty was minor. The manufacturing sections were determined by mathematically passing a spline through common points on all streamsurface sections and determining the intersections of these splines with Cartesian planes normal to the stacking axis. The original method used to make this transformation contained a small error related to streamsurface meridional slope. If a streamsurface was cylindrical, the error was zero. However, at the hub and tip of the rotor, where the maximum slopes were encountered, the streamsurface metal angles had errors approaching one degree, open at the tip and closed at the hub. This was reported in Reference 1, and the corrected method used for this design was reported in Reference 3.

The revised coordinates of the rotor hub flowpath are presented in Table I. The rotor stack axis is located at an axial coordinate of 0.982 inches, measured from the same origin as was used to define the annulus geometry. For further details of the annulus geometry, see Reference 2. The new rotor solidity distribution is compared with the original distribution in Figure 3. Also shown is an "effective" solidity distribution computed according to

$$\sigma_{eff} = \frac{(Ch)_p + (Ch)_s}{2\pi \bar{r}/N} \tag{2}$$

## GENERAL FLOW PARAMETERS

| LOCA TION | RADIUS | VELOCITIES ABSOLUTE | MERIDNL. | TANGENTL. | TEMPERATURES TOTAL | STATIC | PRESSURES TOTAL | STATIC | MACH NUMBER | WHIRL ANGLE | SLOPE ANGLE | RAD.OF CURVTRE. | STATIC DENSITY | LOCA TION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7.6920 | 485.994 | 485.994 | 0.000 | 734.7 | 714.8 | 5821.88 | 5469.76 | .3732 | 0.000 | .004 | 0.00 | .1435 | 1 |
| 2 | 7.7487 | 516.527 | 516.527 | 0.000 | 736.7 | 714.6 | 6003.63 | 5463.76 | .3959 | 0.000 | .003 | 0.00 | .1436 | 2 |
| 3 | 7.8147 | 537.976 | 537.976 | 0.000 | 738.5 | 714.4 | 6143.27 | 5469.75 | .4107 | 0.000 | .003 | 0.00 | .1436 | 3 |
| 4 | 7.8907 | 551.772 | 551.772 | 0.000 | 740.6 | 715.0 | 6179.17 | 5469.75 | .4211 | 0.000 | .002 | 0.00 | .1435 | 4 |
| 5 | 7.9470 | 566.257 | 566.257 | 0.000 | 742.4 | 715.7 | 6217.90 | 5469.73 | .4313 | 0.000 | .002 | 0.00 | .1433 | 5 |
| 6 | 8.0135 | 585.653 | 585.653 | 0.000 | 744.5 | 715.4 | 6266.02 | 5469.72 | .4450 | 0.000 | .002 | 0.00 | .1432 | 6 |
| 7 | 8.0734 | 603.467 | 603.467 | 0.000 | 747.6 | 717.3 | 6322.71 | 5469.71 | .4539 | 0.000 | .001 | 0.00 | .1430 | 7 |
| 8 | 9.1456 | 624.151 | 624.151 | 0.000 | 750.8 | 710.4 | 6384.03 | 5469.71 | .4752 | 0.000 | .001 | 0.00 | .1428 | 8 |
| 9 | 8.2110 | 565.062 | 565.062 | 0.000 | 754.6 | 713.9 | 6447.93 | 5469.70 | .4906 | 0.000 | 0.000 | 0.00 | .1425 | 9 |
| 10 | 9.2759 | 667.002 | 667.002 | 0.000 | 758.7 | 721.7 | 6517.21 | 5463.70 | .5067 | 0.000 | 0.000 | 0.00 | .1421 | 10 |
| 11 | 8.3401 | 591.163 | 591.163 | 0.000 | 753.5 | 723.7 | 6596.29 | 5469.69 | .5243 | 0.000 | -.001 | 0.00 | .1417 | 11 |
| 12 | 8.4034 | 717.639 | 717.637 | 0.000 | 764.2 | 726.3 | 6645.99 | 5469.69 | .5434 | 0.000 | -.002 | 0.00 | .1412 | 12 |
| 13 | 8.4663 | 745.029 | 745.029 | 0.000 | 770.5 | 730.3 | 6750.30 | 5469.69 | .5625 | 0.000 | -.002 | 0.00 | .1405 | 13 |
| 14 | 8.5279 | 773.792 | 773.792 | 0.000 | 787.1 | 737.3 | 6877.52 | 5463.69 | .5815 | 0.000 | -.003 | 0.00 | .1391 | 14 |
| 15 | 8.5890 | 813.631 | 813.631 | 0.000 | 805.0 | 743.9 | 7011.25 | 5469.69 | .6063 | 0.000 | -.004 | 0.00 | .1368 | 15 |

## OVERALL PERFORMANCE PARAMETERS

| MEAN PARAMETERS | STATION-TO-STATION | INLET-TO-STATION |
|---|---|---|
| PRESSURE RATIO | 1.0080 | 3.0555 |
| DELTA T ON T | 0.0080 | .4612 |
| ISEN. EFFICY. | 0.0080 | .0145 |

| STREAM -LINE | STATION-TO-STATION-PARAMETERS PRESSURE RATIO | DELTA T ON T | ISENTROPIC EFFICIENCY | INLET-TO-STATION-PARAMETERS PRESSURE RATIO | DELTA T ON T | ISENTROPIC EFFICIENCY |
|---|---|---|---|---|---|---|
| 1 | 1.0000 | 0.0000 | 0.0000 | 2.8459 | .4165 | .9357 |
| 2 | 1.0000 | 0.0000 | 0.0000 | 2.8733 | .4203 | .8389 |
| 3 | 1.0000 | 0.0000 | 0.0000 | 2.9032 | .4238 | .8394 |
| 4 | 1.0000 | 0.0000 | 0.0000 | 2.9202 | .4274 | .8377 |
| 5 | 1.0000 | 0.0000 | 0.0000 | 2.9315 | .4313 | .8358 |
| 6 | 1.0000 | 0.0000 | 0.0000 | 2.9613 | .4354 | .8339 |
| 7 | 1.0000 | 0.0000 | 0.0000 | 2.9351 | .4413 | .8315 |
| 8 | 1.0000 | 0.0000 | 0.0000 | 3.0171 | .4476 | .8283 |
| 9 | 1.0000 | 0.0000 | 0.0000 | 3.0472 | .4547 | .8239 |
| 10 | 1.0000 | 0.0000 | 0.0000 | 3.0800 | .4627 | .8155 |
| 11 | 1.0000 | 0.0000 | 0.0000 | 3.1173 | .4719 | .8128 |
| 12 | 1.0000 | 0.0000 | 0.0000 | 3.1597 | .4829 | .8054 |
| 13 | 1.0000 | 0.0000 | 0.0000 | 3.2043 | .4970 | .7937 |
| 14 | 1.0000 | 0.0000 | 0.0000 | 3.2502 | .5175 | .7733 |
| 15 | 1.0000 | 0.0000 | 0.0000 | 3.3134 | .6519 | .7391 |

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where
    $(Ch)_p$  is the principal blade chord
    $(Ch)_s$  is the splitter vane chord
    $\bar{r}$   is the average streamline radius
    N   is the number of principal blades
    $\sigma_{eff}$  is the "effective" solidity

The usefulness of such an "effective" solidity remains to be
determined.

## 2. PRINCIPAL BLADE COORDINATES

The first group of computer output on the following
pages conoerns the coordinates of the principal blades as
determined according to Reference 3. Except for the normalized
data defining the streamsurface blade sections, all dimensions
are in inches. On the first few pages appear sundry constants
and a definition of the 15 streamsurfaces. The streamsurfaces
are defined at eight axial locations which coincide with eight
of the computing stations used for the aerodynamic design
calculations. The origin for the axial locations of the
stations is the same as was used for the aerodynamic analyses.
The input data printout is completed with a table defining the
geometry of each section. Next are shown details of the 15
streamsurface sections. Only the "normalized" data have been
reproduced; the equivalent dimensional data would be derived
by scaling the nondimensional quantities by the meridional
chord of the section. Finally, details of 11 manufacturing
sections through the blade are shown. These plane sections,
perpendicular to the stack axis, are spaced 0.25 inch apart,
and extend slightly beyond the blade in both directions. The
"Z" coordinate is measured along the stack axis from the
machine axis. The origin for the section coordinates is the
stack axis. The "X" direction is parallel to the machine axis,
and "X" increases in the direction of flow. The "Y" direction
is perpendicular to the "X" direction, and the "Y" coordinate
decreases in the direction of rotation. "XS" and "YS" define
the suction surface of the section, and "XP" and "YP" define
the pressure surface. "XSEMI" and "YSEMI" define the leading
edge radius. The trailing edge is a straight line joining the
pressure and suction surfaces. Figure 4 shows superimposed
plots of developed streamsurface sections. Figure 5 shows
a similar view of the manufacturing sections. The slightly
larger change of section visible in Figure 5 is due to extrapo-
lation of the airfoil beyond the hub and casing.

## 3. SPLITTER VANE COORDINATES

The computer printout describing the principal blades is
immediately followed by similar output describing the splitter
vanes. The coordinates were computed by using the computer
program modifications described in Reference 4. These coordinates
are referred to the same stack axis axial location as the

principal blades. However, the splitter vane stack axis is circumferentially rotated exactly six degrees (one-half of the principal blade spacing) from the adjacent principal blade stack axis. The leading and trailing edges of the splitter vane streamsurface sections are defined by circular arcs. Figure 6 shows superimposed plots of the developed streamsurface sections. Figure 7 presents a similar view of the manufacturing sections.

USAF - ARL(ARF)  HIGH MACH NUMBER COMPRESSOR BLADE PROGRAM
**************************************************

| | | |
|---|---|---|
| TITLE | = | ROTOR BLADE |
| NUMBER OF STREAMSURFACES | = | 15 |
| NUMBER OF STATIONS | = | 8 |
| NUMBER OF CONSTANT-Z PLANES | = | 11 |
| NUMBER OF BLADE DATA POINTS | = | 8 |
| NUMBER OF POINTS ON SURFACES | = | 50 |
| NUMBER OF BLADES IN BLADE ROW | = | 30 |
| ISTAK | = | 2 |
| IPUNCH | = | 0 |
| ISECN | = | 0 |
| IFCORD | = | 0 |
| IFPLOT | = | 0 |
| IPRINT | = | 0 |
| | | |
| ZINNER | = | 6.5000 |
| ZOUTER | = | 9.0000 |
| SCALE | = | 2.5000 |
| STACKX | = | .9820 |
| PLTSZE | = | 12.0000 |

STREAMSURFACE GEOMETRY SPECIFICATION

COMPUTING STATION  1      NUMBER OF DESCRIBING POINTS= 2      IFANGS( 1)= 0

| STREAMLINE NUMBER | RADII |
|---|---|
| 1 | 6.6016 |
| 2 | 6.7703 |
| 3 | 6.9389 |
| 4 | 7.1072 |
| 5 | 7.2760 |
| 6 | 7.4455 |
| 7 | 7.6161 |
| 8 | 7.7875 |
| 9 | 7.9603 |
| 10 | 8.1352 |
| 11 | 8.3116 |
| 12 | 8.4905 |
| 13 | 8.6727 |
| 14 | 8.8589 |
| 15 | 9.0500 |

| DESCRIPTION | |
|---|---|
| X | R |
| -.4000 | -0.0000 |
| -.4000 | 108.0000 |

COMPUTING STATION 2    NUMBER OF DESCRIBING POINTS= 2    IFANGS( 2)= 1

| DESCRIPTION | |
|---|---|
| X | R |
| 0.0000 | -0.0000 |
| 0.0000 | 100.0000 |

| STREAMLINE NUMBER | RADII |
|---|---|
| 1 | 6.7586 |
| 2 | 6.9086 |
| 3 | 7.0634 |
| 4 | 7.2131 |
| 5 | 7.3668 |
| 6 | 7.5215 |
| 7 | 7.6775 |
| 8 | 7.8345 |
| 9 | 7.9927 |
| 10 | 8.1523 |
| 11 | 8.3143 |
| 12 | 8.4791 |
| 13 | 8.6462 |
| 14 | 8.8166 |
| 15 | 8.9900 |

COMPUTING STATION 3    NUMBER OF DESCRIBING POINTS= 2    IFANGS( 3)= 1

| DESCRIPTION | |
|---|---|
| X | R |
| .4000 | -0.0000 |
| .4000 | 100.0000 |

| STREAMLINE NUMBER | RADII |
|---|---|
| 1 | 6.9066 |
| 2 | 7.0443 |
| 3 | 7.1829 |
| 4 | 7.3217 |
| 5 | 7.4607 |
| 6 | 7.5993 |
| 7 | 7.7397 |
| 8 | 7.8799 |
| 9 | 8.0211 |
| 10 | 8.1640 |
| 11 | 8.3088 |
| 12 | 8.4564 |
| 13 | 8.6074 |
| 14 | 8.7623 |
| 15 | 8.9231 |

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## COMPUTING STATION 4    NUMBER OF DESCRIBING POINTS= 2    IFANGS( 4)= 1

DESCRIPTION
X          R
.0000    -0.0000
.0000   100.0000

| STREAMLINE NUMBER | RADII |
|---|---|
| 1 | 7.0871 |
| 2 | 7.2111 |
| 3 | 7.3352 |
| 4 | 7.4588 |
| 5 | 7.5820 |
| 6 | 7.7051 |
| 7 | 7.8282 |
| 8 | 7.9512 |
| 9 | 8.0748 |
| 10 | 8.1994 |
| 11 | 8.3253 |
| 12 | 8.4530 |
| 13 | 8.5835 |
| 14 | 8.7175 |
| 15 | 8.8562 |

## COMPUTING STATION 5    NUMBER OF DESCRIBING POINTS= 2    IFANGS( 5)= 1

DESCRIPTION
X          R
1.2000   -0.0000
1.2000   100.0000

| STREAMLINE NUMBER | RADII |
|---|---|
| 1 | 7.2700 |
| 2 | 7.3754 |
| 3 | 7.4806 |
| 4 | 7.5846 |
| 5 | 7.6885 |
| 6 | 7.7926 |
| 7 | 7.8972 |
| 8 | 8.0023 |
| 9 | 8.1083 |
| 10 | 8.2157 |
| 11 | 8.3246 |
| 12 | 8.4355 |
| 13 | 8.5492 |
| 14 | 8.6667 |
| 15 | 8.7894 |

COMPUTING STATION 6     NUMBER OF DESCRIBING POINTS= 2     IFANGS( 6)= 1

DESCRIPTION
x        R
1.6000   -0.0000
1.6000   100.0000

| STREAMLINE NUMBER | RADII |
|---|---|
| 1 | 7.4500 |
| 2 | 7.5291 |
| 3 | 7.6093 |
| 4 | 7.6907 |
| 5 | 7.7731 |
| 6 | 7.8587 |
| 7 | 7.9455 |
| 8 | 8.0340 |
| 9 | 8.1243 |
| 10 | 8.2157 |
| 11 | 8.3110 |
| 12 | 8.4075 |
| 13 | 8.5071 |
| 14 | 8.6110 |
| 15 | 8.7225 |

COMPUTING STATION 7     NUMBER OF DESCRIBING POINTS= 2     IFANGS( 7)= 1

DESCRIPTION
x        R
2.0000   -0.0000
2.0000   100.0000

| STREAMLINE NUMBER | RADII |
|---|---|
| 1 | 7.5585 |
| 2 | 7.6197 |
| 3 | 7.6839 |
| 4 | 7.7501 |
| 5 | 7.8204 |
| 6 | 7.8926 |
| 7 | 7.9673 |
| 8 | 8.0442 |
| 9 | 8.1233 |
| 10 | 8.2067 |
| 11 | 8.2882 |
| 12 | 8.3739 |
| 13 | 8.4623 |
| 14 | 8.5543 |
| 15 | 8.6556 |

COMPUTING STATION  8     NUMBER OF DESCRIBING POINTS= 2      IFANGS( 8)= 0

| DESCRIPTION | |
|---|---|
| X | R |
| 2.3000 | -0.0000 |
| 2.3000 | 100.0000 |

| STREAMLINE NUMBER | RADII |
|---|---|
| 1 | 7.5840 |
| 2 | 7.6483 |
| 3 | 7.7142 |
| 4 | 7.7815 |
| 5 | 7.8493 |
| 6 | 7.9179 |
| 7 | 7.9882 |
| 8 | 8.0593 |
| 9 | 8.1317 |
| 10 | 8.2056 |
| 11 | 8.2816 |
| 12 | 8.3601 |
| 13 | 8.4422 |
| 14 | 8.5303 |
| 15 | 8.6279 |

SECTION GEOMETRY SPECIFICATION

| STREAMLINE NUMBER | INLET ANGLE | OUTLET ANGLE | Y2 LE/ MAX VALUE | Y2 TE/ MAX VALUE | LE RADIUS /CHORD | MAX THICK /CHORD | TE THICK /2*CHORD | POINT OF MAX THICK | CHORD OR AXIAL CD | X STACK OFFSET | Y STACK OFFSET |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.00 | -60.993 | -12.720 | 0.0000 | .2500 | .00175 | .04857 | .00809 | .7000 | 2.1592 | 0.000000 | 0.000000 |
| 3.00 | -62.012 | -15.253 | 0.0000 | .2500 | .00171 | .04536 | .00756 | .7000 | 2.0995 | .009600 | 0.000000 |
| 5.00 | -62.809 | -17.781 | 0.0000 | .2500 | .00167 | .04243 | .00707 | .7000 | 2.0548 | .012300 | 0.000000 |
| 7.00 | -63.579 | -19.780 | 0.0000 | .2500 | .00163 | .03970 | .00662 | .7000 | 2.0241 | .012600 | 0.000000 |
| 9.00 | -64.470 | -21.203 | 0.0000 | .2500 | .00159 | .03731 | .00622 | .7000 | 2.0065 | .014200 | 0.000000 |
| 11.00 | -65.570 | -22.108 | 0.0000 | .2500 | .00156 | .03503 | .00584 | .7000 | 2.0014 | .019500 | 0.000000 |
| 13.00 | -66.882 | -22.317 | 0.0000 | .2500 | .00153 | .03317 | .00553 | .7000 | 2.0038 | .029700 | 0.000000 |
| 15.00 | -68.245 | -21.833 | 0.0000 | .2500 | .00150 | .03129 | .00521 | .7000 | 2.0278 | .044600 | 0.000000 |

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STREAMSURFACE GEOMETRY ON STREAMLINE NUMBER 1
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| | | |
|---|---|---|
| P | = 0.0000 | (D2Y/DX2 OF MEANLINE AT LEADING EDGE AS A FRACTION OF ITS MAXIMUM VALUE.) |
| Q | = .2500 | (D2Y/DX2 OF MEANLINE AT TRAILING EDGE AS A FRACTION OF ITS MAXIMUM VALUE.) |
| BETA1 | =-60.933 | (BLADE INLET ANGLE.) |
| BETA2 | =-12.720 | (BLADE OUTLET ANGLE.) |
| YZERO | = .00175 | (BLADE LEADING EDGE RADIUS AS A FRACTION OF CHORD.) |
| T | = .04857 | (BLADE MAXIMUM THICKNESS AS A FRACTION OF CHORD.) |
| YONE | = .00309 | (BLADE TRAILING EDGE HALF-THICKNESS AS A FRACTION OF CHORD.) |
| Z | = .7030 | (LOCATION OF MAXIMUM THICKNESS AS A FRACTION OF MEAN LINE.) |
| CORD | = 2.1532 | (CHORD OR MERIDIONAL CHORD OF SECTION.) |

NORMALISED RESULTS - ALL THE FOLLOWING REFER TO BLADE HAVING A MERIDIONAL CHORD PROJECTION OF UNITY
*********************************************************************************************************

BLADE CHORD      = 1.4552

STAGGER ANGLE    =-46.628

CAMBER ANGLE     =-48.273

SECTION AREA     = .07417

LOCATION OF CENTROID RELATIVE TO LEADING EDGE

    XBAR =  .49325
    YBAR = -.69725

SECOND MOMENTS OF AREA ABOUT CENTROID

    IX  =  .00609
    IY  =  .00427
    IXY = -.00452

ANGLE OF INCLINATION OF (ONE) PRINCIPAL AXIS TO 'X' AXIS = 42.408

PRINCIPAL SECOND MOMENTS OF AREA ABOUT CENTROID

    IPX = .00923    (AT 42.408 WITH 'X' AXIS)
    IPY = .00014    (AT 42.408 WITH 'Y' AXIS)

| POINT NUMBER | MEANLINE DATA X | Y | ANGLE | THICKNESS | SURFACE COORDINATE DATA XS | YS | XP | YP |
|---|---|---|---|---|---|---|---|---|
| 1 | .00254 | 0.00000 | -60.993 | .00509 | .00477 | .00123 | .00032 | -.00123 |
| 2 | .01514 | -.02271 | -60.984 | .00751 | .01842 | -.02089 | .01185 | -.02453 |
| 3 | .02773 | -.04540 | -60.957 | .00994 | .03207 | -.04299 | .02339 | -.04781 |
| 4 | .04032 | -.05806 | -60.914 | .01235 | .04572 | -.06506 | .03493 | -.07106 |
| 5 | .05292 | -.09067 | -60.853 | .01475 | .05936 | -.08708 | .04647 | -.09427 |
| 6 | .06551 | -.11322 | -60.775 | .01714 | .07293 | -.10904 | .05803 | -.11740 |
| 7 | .07810 | -.13569 | -60.681 | .01950 | .08660 | -.13091 | .05960 | -.14046 |
| 8 | .09070 | -.15806 | -60.570 | .02184 | .10021 | -.15270 | .08118 | -.16343 |
| 9 | .10329 | -.18033 | -60.443 | .02415 | .11379 | -.17437 | .09279 | -.18629 |
| 10 | .11588 | -.20247 | -60.300 | .02643 | .12736 | -.19533 | .10440 | -.20902 |
| 11 | .12848 | -.22448 | -60.141 | .02867 | .14091 | -.21734 | .11604 | -.23152 |
| 12 | .14107 | -.24634 | -59.965 | .03087 | .15443 | -.23861 | .12770 | -.25407 |
| 13 | .15366 | -.26804 | -59.773 | .03303 | .16793 | -.25972 | .13939 | -.27636 |
| 14 | .16626 | -.28957 | -59.565 | .03515 | .18141 | -.28066 | .15110 | -.29847 |
| 15 | .17885 | -.31091 | -59.340 | .03722 | .19486 | -.30142 | .16284 | -.32039 |

| POINT NUMBER | MEANLINE DATA X | Y | ANGLE | THICKNESS | SURFACE COORDINATE DATA XS | YS | XP | YP |
|---|---|---|---|---|---|---|---|---|
| 16 | .19144 | -.33205 | -59.099 | .03923 | .20827 | -.32137 | .17461 | -.34212 |
| 17 | .20404 | -.35298 | -58.841 | .04120 | .22166 | -.34233 | .18641 | -.36364 |
| 18 | .21663 | -.37370 | -58.566 | .04310 | .23502 | -.36246 | .19824 | -.38494 |
| 19 | .22922 | -.39419 | -58.275 | .04495 | .24834 | -.38237 | .21010 | -.40601 |
| 20 | .24182 | -.41444 | -57.966 | .04674 | .26163 | -.40204 | .22200 | -.42683 |
| 21 | .25441 | -.43444 | -57.639 | .04847 | .27488 | -.42147 | .23394 | -.44741 |
| 22 | .26700 | -.45418 | -57.295 | .05014 | .28810 | -.44064 | .24591 | -.46773 |
| 23 | .27960 | -.47365 | -56.932 | .05174 | .30127 | -.45954 | .25792 | -.48777 |
| 24 | .29219 | -.49286 | -56.551 | .05327 | .31441 | -.47818 | .26996 | -.50754 |
| 25 | .30478 | -.51178 | -56.152 | .05474 | .32751 | -.49654 | .28205 | -.52703 |
| 26 | .31737 | -.53042 | -55.734 | .05615 | .34058 | -.51461 | .29417 | -.54622 |
| 27 | .32997 | -.54875 | -55.295 | .05748 | .35360 | -.53239 | .30634 | -.56511 |
| 28 | .34256 | -.56678 | -54.836 | .05875 | .36658 | -.54986 | .31855 | -.58370 |
| 29 | .35515 | -.58450 | -54.361 | .05995 | .37952 | -.56704 | .33079 | -.60197 |
| 30 | .36775 | -.60191 | -53.863 | .06109 | .39241 | -.58390 | .34308 | -.61992 |
| 31 | .38034 | -.61899 | -53.344 | .06215 | .40527 | -.60044 | .35541 | -.63755 |
| 32 | .39293 | -.63575 | -52.804 | .06315 | .41809 | -.61666 | .36778 | -.65484 |
| 33 | .40553 | -.65218 | -52.243 | .06408 | .43086 | -.63256 | .38020 | -.67180 |
| 34 | .41812 | -.66827 | -51.660 | .06494 | .44359 | -.64813 | .39265 | -.68841 |
| 35 | .43071 | -.68402 | -51.055 | .06574 | .45628 | -.66336 | .40515 | -.70469 |
| 36 | .44331 | -.69943 | -50.428 | .06648 | .46893 | -.67826 | .41769 | -.72051 |
| 37 | .45590 | -.71450 | -49.778 | .06714 | .48153 | -.69282 | .43027 | -.73618 |
| 38 | .46849 | -.72921 | -49.105 | .06775 | .49410 | -.70704 | .44289 | -.75139 |
| 39 | .48103 | -.74358 | -48.403 | .06829 | .50663 | -.72091 | .45555 | -.76625 |
| 40 | .49368 | -.75759 | -47.690 | .06873 | .51911 | -.73444 | .46825 | -.78074 |
| 41 | .50627 | -.77125 | -46.948 | .06920 | .53156 | -.74753 | .48099 | -.79487 |
| 42 | .51887 | -.78455 | -46.183 | .06956 | .54396 | -.76047 | .49377 | -.80853 |
| 43 | .53146 | -.79750 | -45.394 | .06967 | .55633 | -.77297 | .50659 | -.82203 |
| 44 | .54405 | -.81009 | -44.583 | .07012 | .56855 | -.78512 | .51944 | -.83506 |
| 45 | .55665 | -.82232 | -43.749 | .07031 | .58096 | -.79692 | .53234 | -.84772 |
| 46 | .56924 | -.83420 | -42.893 | .07045 | .59322 | -.80839 | .54526 | -.86001 |
| 47 | .58183 | -.84572 | -42.014 | .07054 | .60544 | -.81351 | .55823 | -.87193 |
| 48 | .59443 | -.85689 | -41.115 | .07058 | .61763 | -.83030 | .57122 | -.88348 |
| 49 | .60702 | -.86770 | -40.195 | .07057 | .62979 | -.84075 | .58425 | -.89466 |
| 50 | .61961 | -.87817 | -39.256 | .07050 | .64192 | -.85037 | .59731 | -.90547 |
| 51 | .63221 | -.88829 | -38.298 | .07038 | .65401 | -.86067 | .61040 | -.91590 |
| 52 | .64480 | -.89806 | -37.324 | .07018 | .66608 | -.87015 | .62352 | -.92597 |
| 53 | .65739 | -.90749 | -36.333 | .06992 | .67811 | -.87933 | .63668 | -.93566 |
| 54 | .66999 | -.91659 | -35.328 | .06958 | .69010 | -.88820 | .64987 | -.94497 |
| 55 | .68258 | -.92534 | -34.311 | .06917 | .70207 | -.89678 | .66309 | -.95391 |
| 56 | .69517 | -.93377 | -33.283 | .06866 | .71401 | -.90507 | .67633 | -.96248 |
| 57 | .70777 | -.94188 | -32.247 | .06808 | .72593 | -.91309 | .68960 | -.97067 |
| 58 | .72036 | -.94967 | -31.205 | .06740 | .73782 | -.92084 | .70290 | -.97849 |
| 59 | .73295 | -.95714 | -30.159 | .06663 | .74963 | -.92833 | .71622 | -.98594 |
| 60 | .74555 | -.96430 | -29.112 | .06576 | .76154 | -.93558 | .72955 | -.99303 |
| 61 | .75814 | -.97117 | -28.067 | .06479 | .77373 | -.94258 | .74290 | -.99975 |
| 62 | .77073 | -.97774 | -27.026 | .06372 | .78521 | -.94935 | .75626 | -1.00612 |
| 63 | .78333 | -.98402 | -25.993 | .06255 | .79703 | -.95591 | .76962 | -1.01213 |
| 64 | .79592 | -.99002 | -24.971 | .06125 | .80865 | -.96225 | .78299 | -1.01779 |
| 65 | .80851 | -.99575 | -23.963 | .05987 | .82067 | -.96839 | .79635 | -1.02310 |
| 66 | .82111 | -1.00122 | -22.973 | .05836 | .83249 | -.97435 | .80972 | -1.02808 |
| 67 | .83370 | -1.00643 | -22.002 | .05674 | .84433 | -.98013 | .82307 | -1.03273 |
| 68 | .84629 | -1.01140 | -21.056 | .05499 | .85617 | -.98574 | .83641 | -1.03705 |
| 69 | .85889 | -1.01613 | -20.137 | .05313 | .86803 | -.99119 | .84974 | -1.04107 |
| 70 | .87143 | -1.02063 | -19.248 | .05113 | .87991 | -.99650 | .86305 | -1.04477 |
| 71 | .88407 | -1.02493 | -18.393 | .04901 | .89180 | -1.00167 | .87634 | -1.04818 |

| POINT NUMBER | MEANLINE DATA | | | | SURFACE COORDINATE DATA | | | |
|---|---|---|---|---|---|---|---|---|
| | X | Y | ANGLE | THICKNESS | XS | YS | XP | YP |
| 72 | .89667 | -1.02901 | -17.575 | .04676 | .90372 | -1.00573 | .89961 | -1.05130 |
| 73 | .90925 | -1.03291 | -16.797 | .04437 | .91567 | -1.01167 | .90285 | -1.05414 |
| 74 | .92185 | -1.03662 | -16.052 | .04184 | .92764 | -1.01652 | .91606 | -1.05672 |
| 75 | .93445 | -1.04016 | -15.373 | .03916 | .93964 | -1.02128 | .92925 | -1.05904 |
| 76 | .94704 | -1.04355 | -14.734 | .03634 | .95163 | -1.02598 | .94242 | -1.06112 |
| 77 | .95963 | -1.04679 | -14.146 | .03337 | .96371 | -1.03061 | .95555 | -1.06297 |
| 78 | .97222 | -1.04990 | -13.613 | .03025 | .97578 | -1.03520 | .96867 | -1.06460 |
| 79 | .98482 | -1.05289 | -13.137 | .02695 | .98783 | -1.03977 | .98175 | -1.06602 |
| 80 | .99741 | -1.05578 | -12.720 | .02351 | 1.00000 | -1.04432 | .99482 | -1.06725 |

STREAMSURFACE GEOMETRY ON STREAMLINE NUMBER 2
**********************************************

| | | |
|---|---|---|
| P | = 0.0000 | (D2YDX2 OF MEANLINE AT LEADING EDGE AS A FRACTION OF ITS MAXIMUM VALUE.) |
| Q | = .2500 | (D2YDX2 OF MEANLINE AT TRAILING EDGE AS A FRACTION OF ITS MAXIMUM VALUE.) |
| BETA1 | =-61.524 | (BLADE INLET ANGLE.) |
| BETA2 | =-13.976 | (BLADE OUTLET ANGLE.) |
| YZERO | = -.00173 | (BLADE LEADING EDGE RADIUS AS A FRACTION OF CHORD.) |
| T | = .04694 | (BLADE MAXIMUM THICKNESS AS A FRACTION OF CHORD.) |
| YONE | = .00782 | (BLADE TRAILING EDGE HALF-THICKNESS AS A FRACTION OF CHORD.) |
| Z | = .7000 | (LOCATION OF MAXIMUM THICKNESS AS A FRACTION OF MEAN LINE.) |
| CORD | = 2.1251 | (CHORD OR MERIDIONAL CHORD OF SECTION.) |

NORMALISED RESULTS - ALL THE FOLLOWING REFER TO ABLADE HAVING A MERIDIONAL CHORD PROJECTION OF UNITY
*******************************************************************************

BLADE CHORD   = 1.4763

STAGGER ANGLE =-47.480

CAMBER ANGLE  =-47.547

SECTION AREA  = .07393

LOCATION OF CENTROID RELATIVE TO LEADING EDGE

    XBAR = .49192
    YBAR = -.71346

SECOND MOMENTS OF AREA ABOUT CENTROID

    IX  = .00538
    IY  = .00425
    IXY = -.08454

ANGLE OF INCLINATION OF (ONE) PRINCIPAL AXIS TO 'X' AXIS = 41.531

PRINCIPAL SECOND MOMENTS OF AREA ABOUT CENTROID

    IPX = .00949     (AT 41.531 WITH 'X' AXIS)
    IPY = .00014     (AT 41.531 WITH 'Y' AXIS)

| POINT NUMBER | MEANLINE DATA X | Y | ANGLE | THICKNESS | SURFACE COORDINATE DATA XS | YS | XP | YP |
|---|---|---|---|---|---|---|---|---|
| 1 | .00255 | 0.00000 | -61.524 | .00511 | .00480 | .00122 | .00031 | -.00122 |
| 2 | .01514 | -.02321 | -61.515 | .00749 | .01844 | -.02142 | .01185 | -.02500 |
| 3 | .02774 | -.04640 | -61.489 | .00987 | .03207 | -.04404 | .02340 | -.04876 |
| 4 | .04033 | -.06956 | -61.446 | .01224 | .04570 | -.06663 | .03495 | -.07249 |
| 5 | .05292 | -.09267 | -61.386 | .01450 | .05933 | -.08917 | .04651 | -.09617 |
| 6 | .06551 | -.11571 | -61.311 | .01694 | .07294 | -.11155 | .05807 | -.11978 |
| 7 | .07810 | -.13868 | -61.213 | .01927 | .08654 | -.13404 | .06965 | -.14332 |
| 8 | .09069 | -.16155 | -61.110 | .02156 | .10013 | -.15634 | .08125 | -.16676 |
| 9 | .10328 | -.18431 | -60.986 | .02383 | .11370 | -.17853 | .09286 | -.19009 |
| 10 | .11587 | -.20695 | -60.845 | .02607 | .12725 | -.20050 | .10449 | -.21330 |
| 11 | .12846 | -.22945 | -60.691 | .02827 | .14079 | -.22253 | .11613 | -.23637 |
| 12 | .14105 | -.25160 | -60.519 | .03043 | .15430 | -.24431 | .12780 | -.25929 |
| 13 | .15364 | -.27399 | -60.332 | .03256 | .16773 | -.26593 | .13950 | -.28204 |
| 14 | .16623 | -.29600 | -60.123 | .03463 | .18125 | -.23737 | .15122 | -.30462 |
| 15 | .17852 | -.31782 | -59.909 | .03666 | .19468 | -.30863 | .16296 | -.32701 |

| POINT NUMBER | MEANLINE DATA X | Y | ANGLE | THICKNESS | SURFACE COORDINATE DATA XS | YS | XP | YP |
|---|---|---|---|---|---|---|---|---|
| 16 | .19141 | -.33945 | -59.673 | .03864 | .20609 | -.32969 | .17474 | -.34920 |
| 17 | .20400 | -.36006 | -59.421 | .04057 | .22147 | -.35055 | .18654 | -.37118 |
| 18 | .21659 | -.38206 | -59.153 | .04244 | .23491 | -.37118 | .19838 | -.39294 |
| 19 | .22918 | -.40302 | -58.867 | .04425 | .24812 | -.39158 | .21025 | -.41446 |
| 20 | .24174 | -.42375 | -58.565 | .04601 | .26149 | -.41175 | .22215 | -.43574 |
| 21 | .25437 | -.44422 | -58.246 | .04770 | .27465 | -.43167 | .23408 | -.45677 |
| 22 | .26696 | -.46443 | -57.910 | .04934 | .28780 | -.45132 | .24606 | -.47754 |
| 23 | .27955 | -.43437 | -57.556 | .05091 | .30103 | -.47072 | .25807 | -.49803 |
| 24 | .29214 | -.50404 | -57.184 | .05241 | .31416 | -.48984 | .27011 | -.51824 |
| 25 | .30473 | -.52342 | -56.794 | .05386 | .32726 | -.50957 | .28220 | -.53817 |
| 26 | .31732 | -.54251 | -56.385 | .05523 | .34032 | -.52722 | .29432 | -.55780 |
| 27 | .32991 | -.56130 | -55.957 | .05654 | .35333 | -.54547 | .30648 | -.57712 |
| 28 | .34250 | -.57978 | -55.510 | .05778 | .36631 | -.56342 | .31869 | -.59614 |
| 29 | .35503 | -.59795 | -55.043 | .05896 | .37925 | -.58106 | .33093 | -.61484 |
| 30 | .36763 | -.61580 | -54.556 | .06007 | .39215 | -.59838 | .34321 | -.63321 |
| 31 | .38027 | -.63332 | -54.050 | .06111 | .40591 | -.61538 | .35554 | -.65126 |
| 32 | .39286 | -.65052 | -53.522 | .06209 | .41782 | -.63206 | .36790 | -.66897 |
| 33 | .40545 | -.66738 | -52.973 | .06300 | .43060 | -.64841 | .38031 | -.68634 |
| 34 | .41804 | -.68390 | -52.404 | .06384 | .44333 | -.66443 | .39275 | -.70337 |
| 35 | .43063 | -.70008 | -51.812 | .06462 | .45603 | -.68010 | .40524 | -.72005 |
| 36 | .44322 | -.71591 | -51.199 | .06533 | .46868 | -.69544 | .41777 | -.73638 |
| 37 | .45532 | -.73140 | -50.563 | .06599 | .48130 | -.71044 | .43033 | -.75235 |
| 38 | .46841 | -.74653 | -49.905 | .06658 | .49387 | -.72509 | .44294 | -.76797 |
| 39 | .48100 | -.75130 | -49.224 | .06710 | .50640 | -.73939 | .45559 | -.78322 |
| 40 | .49353 | -.77572 | -48.521 | .06757 | .51890 | -.75335 | .45827 | -.79810 |
| 41 | .50613 | -.73979 | -47.794 | .06793 | .53135 | -.76695 | .48100 | -.81262 |
| 42 | .51877 | -.80349 | -47.045 | .06833 | .54377 | -.78021 | .49376 | -.82677 |
| 43 | .53136 | -.81683 | -46.273 | .06863 | .55616 | -.79311 | .50656 | -.84055 |
| 44 | .54395 | -.82981 | -45.478 | .06887 | .56850 | -.80567 | .51940 | -.85396 |
| 45 | .55654 | -.94244 | -44.661 | .06905 | .53081 | -.81788 | .53227 | -.86699 |
| 46 | .56913 | -.85470 | -43.822 | .06918 | .59308 | -.82974 | .54518 | -.87965 |
| 47 | .58172 | -.85660 | -42.961 | .06927 | .60532 | -.84126 | .55812 | -.89195 |
| 48 | .59431 | -.87815 | -42.079 | .06930 | .61753 | -.85243 | .57109 | -.90387 |
| 49 | .60690 | -.88934 | -41.177 | .06928 | .62971 | -.86327 | .58410 | -.91541 |
| 50 | .61943 | -.90018 | -40.255 | .06921 | .64185 | -.87377 | .59713 | -.92654 |
| 51 | .53203 | -.91066 | -39.314 | .06908 | .65397 | -.88394 | .61020 | -.93738 |
| 52 | .64457 | -.92080 | -38.356 | .06888 | .66605 | -.89379 | .62330 | -.94781 |
| 53 | .65727 | -.93059 | -37.383 | .06861 | .67809 | -.90333 | .63644 | -.95785 |
| 54 | .56996 | -.94004 | -36.394 | .06827 | .69011 | -.91256 | .64960 | -.96752 |
| 55 | .63245 | -.94915 | -35.393 | .06785 | .70203 | -.92150 | .66280 | -.97681 |
| 56 | .69504 | -.95793 | -34.381 | .06735 | .71405 | -.93014 | .57602 | -.98572 |
| 57 | .70703 | -.96638 | -33.360 | .06676 | .72593 | -.93850 | .65927 | -.99426 |
| 58 | .72022 | -.97451 | -32.332 | .06608 | .73739 | -.94659 | .70255 | -1.00243 |
| 59 | .73291 | -.94233 | -31.300 | .06532 | .74978 | -.95442 | .71584 | -1.01023 |
| 60 | .74540 | -.94983 | -30.257 | .06445 | .76164 | -.96199 | .72916 | -1.01756 |
| 61 | .75799 | -.99702 | -29.234 | .06349 | .77349 | -.96932 | .74249 | -1.02473 |
| 62 | .77058 | -1.00392 | -28.205 | .06243 | .78533 | -.97641 | .75583 | -1.03143 |
| 63 | .78317 | -1.01053 | -27.183 | .06127 | .79717 | -.98328 | .76918 | -1.03779 |
| 64 | .80899 | -1.01686 | -26.171 | .06001 | .80899 | -.98993 | .73253 | -1.04378 |
| 65 | .80835 | -1.02291 | -25.172 | .05863 | .82082 | -.93638 | .79568 | -1.04944 |
| 66 | .82094 | -1.02869 | -24.189 | .05715 | .83265 | -1.00263 | .80924 | -1.05476 |
| 67 | .83353 | -1.03422 | -23.226 | .05555 | .84449 | -1.00870 | .82255 | -1.05974 |
| 68 | .84612 | -1.03950 | -22.286 | .05383 | .85633 | -1.01460 | .83592 | -1.06441 |
| 69 | .85871 | -1.04455 | -21.372 | .05200 | .86819 | -1.02033 | .84924 | -1.06876 |
| 70 | .87131 | -1.04936 | -20.488 | .05004 | .88006 | -1.02532 | .86255 | -1.07280 |
| 71 | .88390 | -1.05396 | -19.637 | .04797 | .89195 | -1.03137 | .87584 | -1.07655 |

| POINT NUMBER | MEANLINE DATA | | | |
|---|---|---|---|---|
| | X | Y | ANGLE | THICKNESS |
| 72 | .89649 | -1.05835 | -18.822 | .04576 |
| 73 | .90903 | -1.06255 | -18.047 | .04342 |
| 74 | .92167 | -1.06656 | -17.314 | .0?55 |
| 75 | .93426 | -1.07048 | -16.627 | .03834 |
| 76 | .94655 | -1.07408 | -15.983 | .03559 |
| 77 | .95944 | -1.07762 | -15.402 | .03269 |
| 78 | .97203 | -1.08102 | -14.869 | .02965 |
| 79 | .98462 | -1.08431 | -14.393 | .02645 |
| 80 | .99721 | -1.08749 | -13.976 | .02309 |

| SURFACE COORDINATE DATA | | | |
|---|---|---|---|
| XS | YS | XP | YP |
| .90387 | -1.03669 | .88910 | -1.08001 |
| .91580 | -1.04190 | .90235 | -1.08319 |
| .92776 | -1.04701 | .91557 | -1.08610 |
| .93974 | -1.05203 | .92877 | -1.08877 |
| .95175 | -1.05698 | .94195 | -1.09119 |
| .96378 | -1.06186 | .95510 | -1.09338 |
| .97583 | -1.06670 | .96823 | -1.09535 |
| .98791 | -1.07150 | .98133 | -1.09712 |
| 1.00000 | -1.07628 | .99442 | -1.09870 |

STREAMSURFACE GEOMETRY ON STREAMLINE NUMBER 3
*****************************************

P       = 0.0000      (D2YDX2 OF MEANLINE AT LEADING EDGE AS A FRACTION OF ITS MAXIMUM VALUE.)
Q       = .2500       (D2YDX2 OF MEANLINE AT TRAILING EDGE AS A FRACTION OF ITS MAXIMUM VALUE.)
BETA1   =-62.012      (BLADE INLET ANGLE.)
BETA2   =-16.263      (BLADE OUTLET ANGLE.)
YZERO   = .00171      (BLADE LEADING EDGE RADIUS AS A FRACTION OF CHORD.)
T       = .04336      (BLADE MAXIMUM THICKNESS AS A FRACTION OF CHORD.)
YONE    = .00756      (BLADE TRAILING EDGE HALF-THICKNESS AS A FRACTION OF CHORD.)
Z       = .7000       (LOCATION OF MAXIMUM THICKNESS AS A FRACTION OF MEAN LINE.)
CORD    = 2.0995      (CHORD OR MERIDIONAL CHORD OF SECTION.)

NORMALISED RESULTS - ALL THE FOLLOWING REFER TO A BLADE HAVING A MERIDIONAL CHORD PROJECTION OF UNITY
*****************************************

BLADE CHORD    = 1.6392

STAGGER ANGLE  =-48.285

CAMBER ANGLE   =-46.759

SECTION AREA   = .07363

LOCATION OF CENTROID RELATIVE TO LEADING EDGE

   XBAR = .49078
   YBAR = -.72912

SECOND MOMENTS OF AREA ABOUT CENTROID

   IX  = .00556
   IY  = .00423
   IXY = -.00475

ANGLE OF INCLINATION OF (ONE) PRINCIPAL AXIS TO 'X' AXIS = 40.707

PRINCIPAL SECOND MOMENTS OF AREA ABOUT CENTROID

   IPX = .00975      (AT 40.707 WITH 'X' AXIS)
   IPY = .00014      (AT 40.707 WITH 'Y' AXIS)

| POINT NUMBER | MEANLINE DATA X | Y | ANGLE | THICKNESS | SURFACE COORDINATE DATA XS | YS | XP | YP |
|---|---|---|---|---|---|---|---|---|
| 1 | .00255 | 0.00000 | -62.312 | .00513 | .00443 | .00120 | .00030 | -.00120 |
| 2 | .01515 | -.02368 | -62.003 | .00747 | .01845 | -.02193 | .01186 | -.02544 |
| 3 | .02774 | -.04735 | -61.973 | .00980 | .03207 | -.04505 | .02341 | -.04965 |
| 4 | .04033 | -.07098 | -61.936 | .01213 | .04568 | -.06813 | .03498 | -.07384 |
| 5 | .05232 | -.04457 | -61.873 | .01444 | .05928 | -.03116 | .04655 | -.09797 |
| 6 | .06550 | -.11809 | -61.304 | .01674 | .07281 | -.11413 | .05813 | -.12204 |
| 7 | .07803 | -.14152 | -61.714 | .01902 | .09647 | -.13732 | .06972 | -.14503 |
| 8 | .09068 | -.16487 | -61.608 | .02127 | .10004 | -.15441 | .08132 | -.16492 |
| 9 | .10327 | -.14810 | -61.487 | .02360 | .11353 | -.18249 | .09294 | -.19371 |
| 10 | .11595 | -.21120 | -61.350 | .02563 | .12713 | -.20505 | .10458 | -.21735 |
| 11 | .12394 | -.23417 | -61.193 | .02785 | .14065 | -.22746 | .11624 | -.24088 |
| 12 | .14103 | -.25699 | -61.030 | .02997 | .15414 | -.24973 | .12792 | -.26425 |
| 13 | .15362 | -.27964 | -60.947 | .03205 | .16762 | -.27184 | .13962 | -.28745 |
| 14 | .16621 | -.30212 | -60.648 | .03409 | .18107 | -.29377 | .15135 | -.31048 |
| 15 | .17880 | -.32441 | -60.434 | .03605 | .19449 | -.31551 | .16310 | -.33331 |

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| POINT NUMBER | MEANLINE DATA | | | | SURFACE COORDINATE DATA | | | |
|---|---|---|---|---|---|---|---|---|
| | X | Y | ANGLE | THICKNESS | XS | YS | XP | YP |
| 16 | .19135 | -.36650 | -60.203 | .03802 | .20786 | -.33705 | .17489 | -.35594 |
| 17 | .20397 | -.36637 | -59.957 | .03991 | .22125 | -.35938 | .18670 | -.37836 |
| 18 | .21656 | -.39002 | -59.695 | .04175 | .23458 | -.37949 | .19854 | -.40056 |
| 19 | .22915 | -.41144 | -59.416 | .04352 | .24763 | -.40037 | .21041 | -.42252 |
| 20 | .24174 | -.43262 | -59.121 | .04525 | .26115 | -.42101 | .22232 | -.44423 |
| 21 | .25432 | -.45354 | -58.810 | .04691 | .27439 | -.44139 | .23426 | -.46569 |
| 22 | .26691 | -.47420 | -58.481 | .04851 | .28759 | -.46152 | .24624 | -.48688 |
| 23 | .27950 | -.49459 | -58.135 | .05005 | .30075 | -.48138 | .25825 | -.50780 |
| 24 | .29209 | -.51470 | -57.771 | .05153 | .31388 | -.50096 | .27029 | -.52844 |
| 25 | .30468 | -.53452 | -57.390 | .05294 | .32697 | -.52026 | .28238 | -.54879 |
| 26 | .31726 | -.55405 | -56.990 | .05429 | .34003 | -.53926 | .29450 | -.56884 |
| 27 | .32985 | -.57327 | -56.572 | .05557 | .35304 | -.55737 | .30666 | -.58858 |
| 28 | .34244 | -.59219 | -56.136 | .05679 | .36602 | -.57637 | .31886 | -.60801 |
| 29 | .35503 | -.61079 | -55.680 | .05794 | .37895 | -.59446 | .33110 | -.62712 |
| 30 | .36762 | -.62907 | -55.206 | .05902 | .39185 | -.61223 | .34338 | -.64591 |
| 31 | .38020 | -.64702 | -54.709 | .06004 | .40471 | -.62367 | .35570 | -.66436 |
| 32 | .39279 | -.66463 | -54.194 | .06100 | .41753 | -.64679 | .36806 | -.68245 |
| 33 | .40538 | -.68191 | -53.658 | .06188 | .43030 | -.66358 | .38046 | -.70025 |
| 34 | .41797 | -.69885 | -53.101 | .06271 | .44304 | -.68003 | .39289 | -.71768 |
| 35 | .43056 | -.71544 | -52.523 | .06347 | .45574 | -.69614 | .40537 | -.73475 |
| 36 | .44314 | -.73169 | -51.923 | .06417 | .46340 | -.71190 | .41789 | -.75148 |
| 37 | .45573 | -.74758 | -51.302 | .06480 | .48102 | -.72732 | .43044 | -.76784 |
| 38 | .46832 | -.76311 | -50.659 | .06538 | .49360 | -.74239 | .44304 | -.78384 |
| 39 | .48091 | -.77829 | -49.993 | .06589 | .50614 | -.75711 | .45567 | -.79947 |
| 40 | .49350 | -.79311 | -49.305 | .06635 | .51845 | -.77148 | .46834 | -.81474 |
| 41 | .50609 | -.80757 | -48.595 | .06674 | .53112 | -.78550 | .48105 | -.82964 |
| 42 | .51867 | -.82166 | -47.862 | .06708 | .54355 | -.79916 | .49380 | -.84417 |
| 43 | .53125 | -.83539 | -47.107 | .06737 | .55594 | -.81247 | .50653 | -.85832 |
| 44 | .54385 | -.84876 | -46.330 | .06760 | .56831 | -.82542 | .51940 | -.87210 |
| 45 | .55644 | -.86177 | -45.530 | .06778 | .58062 | -.83803 | .53225 | -.88551 |
| 46 | .56903 | -.87441 | -44.709 | .06790 | .59291 | -.85023 | .54514 | -.89854 |
| 47 | .58161 | -.88669 | -43.866 | .06798 | .60517 | -.86218 | .55806 | -.91119 |
| 48 | .59420 | -.89861 | -43.002 | .06800 | .61739 | -.87374 | .57101 | -.92347 |
| 49 | .60679 | -.91017 | -42.118 | .06798 | .62958 | -.88495 | .58399 | -.93538 |
| 50 | .61938 | -.92137 | -41.214 | .06790 | .64175 | -.89583 | .59701 | -.94691 |
| 51 | .63197 | -.93222 | -40.292 | .06777 | .65384 | -.90637 | .61005 | -.95606 |
| 52 | .64455 | -.94272 | -39.352 | .06757 | .66595 | -.91659 | .62313 | -.96684 |
| 53 | .65714 | -.95286 | -38.397 | .06730 | .67804 | -.92649 | .63624 | -.97924 |
| 54 | .66973 | -.96267 | -37.426 | .06695 | .69007 | -.93608 | .64938 | -.98925 |
| 55 | .68232 | -.97213 | -36.443 | .06653 | .70209 | -.94537 | .66256 | -.99889 |
| 56 | .69491 | -.98126 | -35.445 | .06603 | .71405 | -.95436 | .67576 | -1.00816 |
| 57 | .70743 | -.99006 | -34.444 | .06545 | .72600 | -.96307 | .68898 | -1.01704 |
| 58 | .72009 | -.99853 | -33.433 | .06478 | .73793 | -.97150 | .70224 | -1.02556 |
| 59 | .73267 | -1.00668 | -32.417 | .06401 | .74983 | -.97966 | .71551 | -1.03370 |
| 60 | .74525 | -1.01452 | -31.393 | .06316 | .76171 | -.98756 | .72881 | -1.04147 |
| 61 | .75785 | -1.02205 | -30.381 | .06221 | .77355 | -.99522 | .74211 | -1.04888 |
| 62 | .77043 | -1.02928 | -29.366 | .06116 | .78543 | -1.00253 | .75544 | -1.05593 |
| 63 | .78302 | -1.03622 | -28.357 | .06001 | .79727 | -1.00981 | .76877 | -1.06262 |
| 64 | .79561 | -1.04287 | -27.357 | .05876 | .80911 | -1.01678 | .78211 | -1.06897 |
| 65 | .80820 | -1.04925 | -26.370 | .05741 | .82095 | -1.02353 | .79545 | -1.07497 |
| 66 | .82079 | -1.05536 | -25.398 | .05595 | .83279 | -1.03009 | .80879 | -1.08053 |
| 67 | .83337 | -1.06120 | -24.445 | .05437 | .84462 | -1.03645 | .82212 | -1.08595 |
| 68 | .84536 | -1.06688 | -23.513 | .05269 | .85667 | -1.04265 | .83545 | -1.09096 |
| 69 | .85855 | -1.07216 | -22.608 | .05089 | .86833 | -1.04867 | .84677 | -1.09555 |
| 70 | .87114 | -1.07729 | -21.731 | .04897 | .88020 | -1.05454 | .86207 | -1.10004 |
| 71 | .88373 | -1.08220 | -20.896 | .04594 | .89203 | -1.06027 | .87536 | -1.10413 |

MEANLINE DATA

| POINT NUMBER | X | Y | ANGLE | THICKNESS |
|---|---|---|---|---|
| 72 | .89631 | -1.05690 | -20.077 | .04478 |
| 73 | .90890 | -1.04141 | -19.306 | .04249 |
| 74 | .92143 | -1.03572 | -18.578 | .04007 |
| 75 | .93408 | -1.09987 | -17.894 | .03752 |
| 76 | .94667 | -1.10386 | -17.258 | .03484 |
| 77 | .95925 | -1.10770 | -16.574 | .03202 |
| 78 | .97184 | -1.11140 | -16.143 | .02905 |
| 79 | .98443 | -1.11499 | -15.668 | .02593 |
| 80 | .99702 | -1.11847 | -15.253 | .02267 |

SURFACE COORDINATE DATA

| XS | YS | XP | YP |
|---|---|---|---|
| .90400 | -1.06597 | .88863 | -1.10793 |
| .91593 | -1.07135 | .90188 | -1.11146 |
| .92787 | -1.07673 | .91511 | -1.11472 |
| .93984 | -1.08202 | .92831 | -1.11773 |
| .95183 | -1.08722 | .94150 | -1.12049 |
| .96385 | -1.09236 | .95466 | -1.12303 |
| .97588 | -1.09745 | .96780 | -1.12535 |
| .98793 | -1.10250 | .98093 | -1.12747 |
| 1.00000 | -1.10753 | .99404 | -1.12940 |

STREAMSURFACE GEOMETRY ON STREAMLINE NUMBER 4
*************************************************

| | | |
|---|---|---|
| P | = 0.0000 | (02V0X2 OF MEANLINE AT LEADING EDGE AS A FRACTION OF ITS MAXIMUM VALUE.) |
| Q | = .2530 | (02V0X2 OF MEANLINE AT TRAILING EDGE AS A FRACTION OF ITS MAXIMUM VALUE.) |
| BETA1 | =-62.431 | (BLADE INLET ANGLE.) |
| BETA2 | =-16.550 | (BLADE OUTLET ANGLE.) |
| YZERO | = .00169 | (BLADE LEADING EDGE RADIUS AS A FRACTION OF CHORD.) |
| T | = .04337 | (BLADE MAXIMUM THICKNESS AS A FRACTION OF CHORD.) |
| YONE | = .00731 | (BLADE TRAILING EDGE HALF-THICKNESS AS A FRACTION OF CHORD.) |
| Z | = .7000 | (LOCATION OF MAXIMUM THICKNESS AS A FRACTION OF MEAN LINE.) |
| CORD | = 2.0751 | (CHORD OR MERIDIONAL CHORD OF SECTION.) |

NORMALISED RESULTS - ALL THE FOLLOWING REFER TO ABLADE HAVING A MERIDIONAL CHORD PROJECTION OF UNITY
***********************************************************************************************

BLADE CHORD     = 1.5203

STAGGER ANGLE   =-49.017

CAMBER ANGLE    =-45.881

SECTION AREA    = .07322

LOCATION OF CENTROID RELATIVE TO LEADING EDGE

XBAR = .46934
YBAR = -.74351

SECOND MOMENTS OF AREA ABOUT CENTROID

IX  = .00532
IY  = .00420
IXY = -.00465

ANGLE OF INCLINATION OF (ONE) PRINCIPAL AXIS TO 'X' AXIS = 39.971

PRINCIPAL SECOND MOMENTS OF AREA ABOUT CENTROID

IPX = .00998     (AT 39.971 WITH 'X' AXIS)
IPY = .00013     (AT 39.971 WITH 'Y' AXIS)

| POINT NUMBER | MEANLINE DATA X | Y | ANGLE | THICKNESS | SURFACE COORDINATE DATA XS | YS | XP | YP |
|---|---|---|---|---|---|---|---|---|
| 1  | .00257 | 0.00000 | -62.431 | .00514 | .00465 | .00119 | .00029 | -.00119 |
| 2  | .01516 | -.02410 | -62.422 | .00743 | .01845 | -.02238 | .01186 | -.02582 |
| 3  | .02774 | -.04819 | -62.398 | .00972 | .03205 | -.04594 | .02343 | -.05044 |
| 4  | .04033 | -.07224 | -62.357 | .01206 | .04564 | -.06946 | .03501 | -.07502 |
| 5  | .05291 | -.09624 | -62.300 | .01427 | .05923 | -.09293 | .04660 | -.09956 |
| 6  | .06550 | -.12018 | -62.227 | .01652 | .07281 | -.11633 | .05819 | -.12403 |
| 7  | .07808 | -.14403 | -62.139 | .01875 | .08637 | -.13965 | .06979 | -.14842 |
| 8  | .09067 | -.16779 | -62.036 | .02096 | .09993 | -.16288 | .08141 | -.17271 |
| 9  | .10325 | -.19144 | -61.917 | .02314 | .11346 | -.18599 | .09305 | -.19669 |
| 10 | .11584 | -.21496 | -61.783 | .02529 | .12693 | -.20898 | .10470 | -.22094 |
| 11 | .12843 | -.23835 | -61.635 | .02741 | .14048 | -.23184 | .11637 | -.24486 |
| 12 | .14101 | -.26158 | -61.471 | .02949 | .15397 | -.25454 | .12806 | -.26852 |
| 13 | .15350 | -.28465 | -61.291 | .03153 | .16742 | -.27707 | .13977 | -.29222 |
| 14 | .16618 | -.30763 | -61.097 | .03352 | .18086 | -.29343 | .15151 | -.31564 |
| 15 | .17877 | -.33023 | -60.887 | .03547 | .19426 | -.32150 | .16327 | -.33086 |

POINT NUMBER, MEANLINE DATA, SURFACE COORDINATE DATA header:

| POINT NUMBER | \| | MEANLINE DATA | | | \| | SURFACE COORDINATE DATA | | |
|---|---|---|---|---|---|---|---|---|
| | | X | Y | ANGLE | THICKNESS | XS | YS | XP | YP |

| POINT NUMBER | X | Y | ANGLE | THICKNESS | XS | YS | XP | YP |
|---|---|---|---|---|---|---|---|---|
| 16 | .19135 | -.35273 | -60.662 | .03737 | .20764 | -.34358 | .17506 | -.36189 |
| 17 | .20394 | -.37502 | -60.421 | .03923 | .22100 | -.36533 | .18688 | -.38470 |
| 18 | .21653 | -.39708 | -60.165 | .04102 | .23432 | -.38687 | .19873 | -.40728 |
| 19 | .22911 | -.41890 | -59.893 | .04277 | .24761 | -.40817 | .21061 | -.42963 |
| 20 | .24170 | -.44048 | -59.604 | .04445 | .26087 | -.42324 | .22252 | -.45173 |
| 21 | .25429 | -.46181 | -59.299 | .04608 | .27409 | -.45004 | .23447 | -.47357 |
| 22 | .26687 | -.48287 | -58.973 | .04765 | .28729 | -.47059 | .24645 | -.49515 |
| 23 | .27945 | -.50366 | -58.640 | .04916 | .30044 | -.49087 | .25846 | -.51645 |
| 24 | .29204 | -.52417 | -58.285 | .05061 | .31356 | -.51087 | .27051 | -.53747 |
| 25 | .30462 | -.54439 | -57.912 | .05199 | .32665 | -.53058 | .28263 | -.55820 |
| 26 | .31721 | -.56431 | -57.522 | .05331 | .33970 | -.55000 | .29472 | -.57863 |
| 27 | .32980 | -.58393 | -57.113 | .05457 | .35271 | -.56912 | .30698 | -.59875 |
| 28 | .34238 | -.60324 | -56.687 | .05576 | .36563 | -.58793 | .31908 | -.61855 |
| 29 | .35497 | -.62223 | -56.241 | .05689 | .37861 | -.60542 | .33132 | -.63803 |
| 30 | .36755 | -.64090 | -55.777 | .05795 | .39151 | -.62460 | .34360 | -.65719 |
| 31 | .38014 | -.65923 | -55.293 | .05895 | .40437 | -.64245 | .35591 | -.67601 |
| 32 | .39272 | -.67724 | -54.789 | .05988 | .41713 | -.65937 | .36826 | -.69450 |
| 33 | .40531 | -.69490 | -54.266 | .06075 | .42997 | -.67716 | .38065 | -.71264 |
| 34 | .41790 | -.71222 | -53.722 | .06156 | .44271 | -.69431 | .39308 | -.73043 |
| 35 | .43043 | -.72919 | -53.157 | .06230 | .45541 | -.71051 | .40555 | -.74787 |
| 36 | .44307 | -.74581 | -52.572 | .06298 | .46807 | -.72667 | .41806 | -.76495 |
| 37 | .45565 | -.76208 | -51.965 | .06361 | .48070 | -.74249 | .43060 | -.78168 |
| 38 | .46824 | -.77799 | -51.337 | .06417 | .49329 | -.75795 | .44319 | -.79803 |
| 39 | .48082 | -.79354 | -50.687 | .06467 | .50584 | -.77305 | .45581 | -.81403 |
| 40 | .49341 | -.80873 | -50.015 | .06511 | .51835 | -.78731 | .46846 | -.82965 |
| 41 | .50593 | -.82355 | -49.321 | .06550 | .53083 | -.80221 | .48116 | -.84490 |
| 42 | .51854 | -.83801 | -48.605 | .06583 | .54327 | -.81625 | .49389 | -.85978 |
| 43 | .53117 | -.85211 | -47.867 | .06611 | .55563 | -.82394 | .50665 | -.87428 |
| 44 | .54375 | -.86584 | -47.105 | .06633 | .56805 | -.84427 | .51945 | -.88841 |
| 45 | .55634 | -.87920 | -46.326 | .06650 | .59039 | -.85624 | .53229 | -.90216 |
| 46 | .56892 | -.89220 | -45.523 | .06662 | .59269 | -.86687 | .54515 | -.91554 |
| 47 | .58151 | -.90484 | -44.699 | .06669 | .60496 | -.88114 | .55805 | -.92854 |
| 48 | .59403 | -.91711 | -43.855 | .06671 | .61720 | -.83306 | .57098 | -.94117 |
| 49 | .60668 | -.92902 | -42.990 | .06669 | .62942 | -.90464 | .58394 | -.95341 |
| 50 | .61926 | -.94058 | -42.107 | .06661 | .64160 | -.91587 | .59693 | -.96529 |
| 51 | .63185 | -.95178 | -41.204 | .06647 | .65374 | -.92677 | .60996 | -.97678 |
| 52 | .64444 | -.96262 | -40.285 | .06627 | .66586 | -.93734 | .62301 | -.98789 |
| 53 | .65702 | -.97311 | -39.349 | .06600 | .67794 | -.94759 | .63610 | -.99863 |
| 54 | .66961 | -.98326 | -38.399 | .06566 | .69000 | -.95753 | .64922 | -1.00899 |
| 55 | .68219 | -.99306 | -37.436 | .06524 | .70202 | -.96716 | .66236 | -1.01896 |
| 56 | .69478 | -1.00253 | -36.461 | .06474 | .71402 | -.97650 | .67554 | -1.02856 |
| 57 | .70736 | -1.01166 | -35.477 | .06416 | .72598 | -.94554 | .68875 | -1.03779 |
| 58 | .71995 | -1.02047 | -34.485 | .06349 | .73792 | -.99430 | .70198 | -1.04664 |
| 59 | .73254 | -1.02896 | -33.488 | .06274 | .74984 | -1.00279 | .71523 | -1.05512 |
| 60 | .74512 | -1.03713 | -32.488 | .06189 | .75174 | -1.01102 | .72850 | -1.06323 |
| 61 | .75771 | -1.04499 | -31.488 | .06095 | .77363 | -1.01900 | .74179 | -1.07098 |
| 62 | .77029 | -1.05255 | -30.490 | .05992 | .78543 | -1.02673 | .75509 | -1.07836 |
| 63 | .78288 | -1.05981 | -29.498 | .05879 | .79735 | -1.03423 | .76840 | -1.08539 |
| 64 | .79546 | -1.06679 | -28.514 | .05756 | .80920 | -1.04150 | .78173 | -1.09208 |
| 65 | .80805 | -1.07349 | -27.542 | .05622 | .82105 | -1.04856 | .79505 | -1.09841 |
| 66 | .82063 | -1.07992 | -26.584 | .05479 | .83299 | -1.05542 | .80838 | -1.10441 |
| 67 | .83322 | -1.08609 | -25.644 | .05324 | .84474 | -1.06209 | .82170 | -1.11008 |
| 68 | .84581 | -1.09200 | -24.726 | .05159 | .85659 | -1.06858 | .83502 | -1.11543 |
| 69 | .85833 | -1.03768 | -23.832 | .04982 | .86846 | -1.07489 | .84833 | -1.12047 |
| 70 | .87099 | -1.10313 | -22.965 | .04794 | .88033 | -1.08106 | .86162 | -1.12520 |
| 71 | .88356 | -1.10835 | -22.131 | .04594 | .89222 | -1.08707 | .87491 | -1.12963 |

| POINT NUMBER | MEANLINE DATA | | | | SURFACE COORDINATE DATA | | | |
|---|---|---|---|---|---|---|---|---|
| | X | Y | ANGLE | THICKNESS | XS | YS | XP | YP |
| 72 | .89615 | -1.11337 | -21.330 | .04383 | .90412 | -1.09295 | .88818 | -1.13378 |
| 73 | .90873 | -1.11818 | -20.568 | .04159 | .91604 | -1.09872 | .90143 | -1.13765 |
| 74 | .92132 | -1.12282 | -19.846 | .03923 | .92798 | -1.10437 | .91466 | -1.14126 |
| 75 | .93391 | -1.12727 | -19.169 | .03673 | .93994 | -1.10993 | .92787 | -1.14462 |
| 76 | .94643 | -1.13157 | -18.539 | .03411 | .95191 | -1.11540 | .94107 | -1.14774 |
| 77 | .95908 | -1.13572 | -17.960 | .03135 | .96391 | -1.12081 | .95424 | -1.15063 |
| 78 | .97165 | -1.13973 | -17.433 | .02846 | .97592 | -1.12616 | .96740 | -1.15331 |
| 79 | .98425 | -1.14363 | -16.962 | .02542 | .98796 | -1.13147 | .98054 | -1.15578 |
| 80 | .99683 | -1.14742 | -16.550 | .02223 | 1.00000 | -1.13676 | .99367 | -1.15807 |

STREAMSURFACE GEOMETRY ON STREAMLINE NUMBER 5
*************************************************

| | | | |
|---|---|---|---|
| P | = 0.0000 | (D2YDX2 OF MEANLINE AT LEADING EDGE AS A FRACTION OF ITS MAXIMUM VALUE.) |
| Q | = .2500 | (D2YDX2 OF MEANLINE AT TRAILING EDGE AS A FRACTION OF ITS MAXIMUM VALUE.) |
| BETA1 | =-62.809 | (BLADE INLET ANGLE.) |
| BETA2 | =-17.731 | (BLADE OUTLET ANGLE.) |
| YZERO | = .00167 | (BLADE LEADING EDGE RADIUS AS A FRACTION OF CHORD.) |
| T | = .04243 | (BLADE MAXIMUM THICKNESS AS A FRACTION OF CHORD.) |
| YONE | = .00707 | (BLADE TRAILING EDGE HALF-THICKNESS AS A FRACTION OF CHORD.) |
| Z | = .7000 | (LOCATION OF MAXIMUM THICKNESS AS A FRACTION OF MEAN LINE.) |
| CORD | = 2.0548 | (CHORD OR MERIDIONAL CHORD OF SECTION.) |

NORMALISED RESULTS - ALL THE FOLLOWING REFER TO A BLADE HAVING A MERIDIONAL CHORD PROJECTION OF UNITY
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BLADE CHORD   = 1.5414

STAGGER ANGLE =-49.636

CAMBER ANGLE  =-45.023

SECTION AREA  = .07271

LOCATION OF CENTROID RELATIVE TO LEADING EDGE

XBAR = .48924
YBAR = -.75694

SECOND MOMENTS OF AREA ABOUT CENTROID

IX  = .00615
IY  = .00416
IXY = -.00493

ANGLE OF INCLINATION OF (ONE) PRINCIPAL AXIS TO 'X' AXIS = 39.300

PRINCIPAL SECOND MOMENTS OF AREA ABOUT CENTROID

IPX = .01013   (AT 39.300 WITH 'X' AXIS)
IPY = .00013   (AT 39.300 WITH 'Y' AXIS)

| POINT NUMBER | M E A N L I N E   D A T A | | | |
|---|---|---|---|---|
| | X | Y | ANGLE | THICKNESS |
| 1 | .00257 | 0.00000 | -62.809 | .00515 |
| 2 | .01516 | -.02449 | -62.801 | .00739 |
| 3 | .02776 | -.04897 | -62.777 | .00963 |
| 4 | .04032 | -.07341 | -62.736 | .01156 |
| 5 | .05291 | -.03780 | -62.681 | .01408 |
| 6 | .06549 | -.12212 | -62.610 | .01629 |
| 7 | .07808 | -.14636 | -62.523 | .01847 |
| 8 | .09065 | -.17051 | -62.422 | .02064 |
| 9 | .10324 | -.19454 | -62.306 | .02277 |
| 10 | .11583 | -.21845 | -62.175 | .02488 |
| 11 | .12841 | -.24222 | -62.029 | .02695 |
| 12 | .14099 | -.26584 | -61.959 | .02894 |
| 13 | .15353 | -.28929 | -61.693 | .03098 |
| 14 | .16615 | -.31256 | -61.503 | .03293 |
| 15 | .17874 | -.33564 | -61.298 | .03484 |

| SURFACE COORDINATE DATA | | | |
|---|---|---|---|
| XS | YS | XP | YP |
| .00486 | .00118 | .00028 | -.00118 |
| .01845 | -.02230 | .01187 | -.02518 |
| .03202 | -.04676 | .02346 | -.05117 |
| .04560 | -.07069 | .03505 | -.07612 |
| .05916 | -.09456 | .04665 | -.10103 |
| .07272 | -.11337 | .05826 | -.12587 |
| .08627 | -.14210 | .06988 | -.15063 |
| .09980 | -.16573 | .08151 | -.17529 |
| .11332 | -.19925 | .09316 | -.19984 |
| .12633 | -.21265 | .10483 | -.22426 |
| .14031 | -.23590 | .11651 | -.24854 |
| .15377 | -.25301 | .12821 | -.27267 |
| .16721 | -.28195 | .13994 | -.29664 |
| .18063 | -.30471 | .15163 | -.32042 |
| .19402 | -.32728 | .16346 | -.34401 |

| POINT NUMBER | MEAN LINE DATA X | Y | ANGLE | THICKNESS | SURFACE COORDINATE DATA XS | YS | XP | YP |
|---|---|---|---|---|---|---|---|---|
| 16 | .19133 | -.35852 | -61.077 | .03671 | .20739 | -.34965 | .17526 | -.36740 |
| 17 | .20391 | -.38119 | -60.841 | .03852 | .22073 | -.37198 | .18709 | -.39057 |
| 18 | .21649 | -.40363 | -60.590 | .04028 | .23404 | -.39374 | .19895 | -.41352 |
| 19 | .22905 | -.42583 | -60.324 | .04199 | .24732 | -.41544 | .21084 | -.43622 |
| 20 | .24165 | -.44779 | -60.042 | .04364 | .26056 | -.43689 | .22276 | -.45868 |
| 21 | .25424 | -.46949 | -59.743 | .04523 | .27378 | -.45910 | .23471 | -.48089 |
| 22 | .26683 | -.49093 | -59.429 | .04677 | .28696 | -.47904 | .24669 | -.50282 |
| 23 | .27941 | -.51209 | -59.098 | .04825 | .30011 | -.49970 | .25871 | -.52448 |
| 24 | .29200 | -.53297 | -58.750 | .04966 | .31322 | -.52009 | .27077 | -.54586 |
| 25 | .30458 | -.55356 | -58.386 | .05102 | .32630 | -.54019 | .28286 | -.56694 |
| 26 | .31716 | -.57386 | -58.004 | .05231 | .33934 | -.56000 | .29498 | -.58772 |
| 27 | .32975 | -.59384 | -57.604 | .05354 | .35235 | -.57958 | .30714 | -.60819 |
| 28 | .34233 | -.61352 | -57.187 | .05470 | .36532 | -.59970 | .31934 | -.62834 |
| 29 | .35491 | -.63287 | -56.751 | .05581 | .37825 | -.61758 | .33158 | -.64817 |
| 30 | .36750 | -.65191 | -56.297 | .05685 | .39114 | -.63613 | .34385 | -.66758 |
| 31 | .38008 | -.67061 | -55.824 | .05782 | .40400 | -.65436 | .35616 | -.68685 |
| 32 | .39266 | -.68897 | -55.332 | .05874 | .41682 | -.67226 | .36851 | -.70567 |
| 33 | .40525 | -.70699 | -54.820 | .05959 | .42960 | -.68983 | .38089 | -.72416 |
| 34 | .41783 | -.72467 | -54.288 | .06038 | .44234 | -.70705 | .39332 | -.74229 |
| 35 | .43041 | -.74200 | -53.736 | .06111 | .45505 | -.72393 | .40578 | -.76007 |
| 36 | .44300 | -.75897 | -53.163 | .06177 | .46772 | -.74046 | .41828 | -.77749 |
| 37 | .45558 | -.77559 | -52.570 | .06238 | .48035 | -.75664 | .43081 | -.79455 |
| 38 | .46816 | -.79185 | -51.956 | .06293 | .49294 | -.77246 | .44339 | -.81125 |
| 39 | .48075 | -.80775 | -51.320 | .06342 | .50550 | -.78794 | .45599 | -.82757 |
| 40 | .49333 | -.82329 | -50.663 | .06385 | .51802 | -.80305 | .46864 | -.84353 |
| 41 | .50591 | -.83846 | -49.985 | .06423 | .53051 | -.81781 | .48132 | -.85911 |
| 42 | .51850 | -.85327 | -49.285 | .06455 | .54296 | -.83221 | .49403 | -.87432 |
| 43 | .53108 | -.86771 | -48.564 | .06482 | .55538 | -.84526 | .50676 | -.88915 |
| 44 | .54367 | -.88178 | -47.821 | .06504 | .56776 | -.85994 | .51957 | -.90361 |
| 45 | .55625 | -.89548 | -47.057 | .06520 | .58011 | -.87327 | .53238 | -.91769 |
| 46 | .56883 | -.90882 | -46.272 | .06532 | .59243 | -.88624 | .54523 | -.93139 |
| 47 | .58142 | -.92179 | -45.466 | .06532 | .60472 | -.89686 | .55811 | -.94472 |
| 48 | .59400 | -.93440 | -44.639 | .06540 | .61698 | -.91113 | .57102 | -.95767 |
| 49 | .60658 | -.94664 | -43.794 | .06537 | .62920 | -.92305 | .58396 | -.97024 |
| 50 | .61917 | -.95853 | -42.929 | .06529 | .64140 | -.93662 | .59693 | -.98243 |
| 51 | .63175 | -.97006 | -42.046 | .06516 | .65357 | -.94586 | .60993 | -.99425 |
| 52 | .64433 | -.98123 | -41.146 | .06495 | .66570 | -.95677 | .62296 | -1.00568 |
| 53 | .65692 | -.99205 | -40.230 | .06469 | .67781 | -.96735 | .63603 | -1.01674 |
| 54 | .66950 | -1.00252 | -39.299 | .06435 | .68988 | -.97762 | .64912 | -1.02742 |
| 55 | .68208 | -1.01265 | -38.355 | .06393 | .70192 | -.98758 | .66225 | -1.03771 |
| 56 | .69467 | -1.02243 | -37.399 | .06344 | .71393 | -.99724 | .67540 | -1.04763 |
| 57 | .70725 | -1.03189 | -36.434 | .06286 | .72592 | -1.00660 | .68858 | -1.05718 |
| 58 | .71983 | -1.04101 | -35.461 | .06220 | .73788 | -1.01568 | .70179 | -1.06635 |
| 59 | .73242 | -1.04982 | -34.483 | .06146 | .74982 | -1.02449 | .71502 | -1.07515 |
| 60 | .74500 | -1.05830 | -33.501 | .06063 | .76173 | -1.03303 | .72827 | -1.08358 |
| 61 | .75759 | -1.06648 | -32.519 | .05970 | .77363 | -1.04151 | .74154 | -1.09165 |
| 62 | .77017 | -1.07435 | -31.539 | .05868 | .78552 | -1.04934 | .75482 | -1.09936 |
| 63 | .78275 | -1.08193 | -30.563 | .05757 | .79739 | -1.05714 | .76812 | -1.10671 |
| 64 | .79534 | -1.08921 | -29.596 | .05636 | .80925 | -1.06471 | .78142 | -1.11372 |
| 65 | .80792 | -1.09622 | -28.639 | .05506 | .82111 | -1.07207 | .79473 | -1.12038 |
| 66 | .82050 | -1.10296 | -27.696 | .05363 | .83297 | -1.07922 | .80604 | -1.12670 |
| 67 | .83309 | -1.10944 | -26.770 | .05211 | .84482 | -1.08617 | .82135 | -1.13270 |
| 68 | .84567 | -1.11566 | -25.664 | .05049 | .85660 | -1.09294 | .83466 | -1.13638 |
| 69 | .85825 | -1.12164 | -24.982 | .04876 | .86855 | -1.09954 | .84796 | -1.14374 |
| 70 | .87084 | -1.12739 | -24.128 | .04692 | .88043 | -1.10598 | .86125 | -1.14860 |
| 71 | .88342 | -1.13292 | -23.303 | .04496 | .89231 | -1.11227 | .87453 | -1.15356 |

| POINT NUMBER | MEANLINE DATA | | | | SURFACE COORDINATE DATA | | | |
|---|---|---|---|---|---|---|---|---|
| | X | Y | ANGLE | THICKNESS | XS | YS | XP | YP |
| 72 | .89600 | -1.13823 | -22.513 | .04289 | .90421 | -1.11843 | .88779 | -1.15804 |
| 73 | .90859 | -1.14335 | -21.759 | .04070 | .91613 | -1.12445 | .90104 | -1.16225 |
| 74 | .92117 | -1.14828 | -21.046 | .03838 | .92805 | -1.13037 | .91428 | -1.16620 |
| 75 | .93375 | -1.15304 | -20.376 | .03595 | .94001 | -1.13619 | .92750 | -1.16983 |
| 76 | .94634 | -1.15764 | -19.752 | .03339 | .95198 | -1.14192 | .94070 | -1.17335 |
| 77 | .95892 | -1.16208 | -19.173 | .03069 | .96390 | -1.14759 | .95368 | -1.17658 |
| 78 | .97150 | -1.16639 | -18.656 | .02786 | .97596 | -1.15319 | .96705 | -1.17959 |
| 79 | .98403 | -1.17058 | -18.190 | .02490 | .98798 | -1.15876 | .98020 | -1.18241 |
| 80 | .99667 | -1.17467 | -17.781 | .02180 | 1.00000 | -1.16429 | .99334 | -1.18505 |

STREAMSURFACE GEOMETRY ON STREAMLINE NUMBER 6
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P     = 0.0000   (D2YDX2 OF MEANLINE AT LEADING EDGE AS A FRACTION OF ITS MAXIMUM VALUE.)
Q     = .2500    (D2YDX2 OF MEANLINE AT TRAILING EDGE AS A FRACTION OF ITS MAXIMUM VALUE.)
BETA1 = -63.185  (BLADE INLET ANGLE.)
BETA2 = -18.860  (BLADE OUTLET ANGLE.)
YZERO = .00165   (BLADE LEADING EDGE RADIUS AS A FRACTION OF CHORD.)
T     = .04103   (BLADE MAXIMUM THICKNESS AS A FRACTION OF CHORD.)
YONE  = .00604   (BLADE TRAILING EDGE HALF-THICKNESS AS A FRACTION OF CHORD.)
Z     = .7000    (LOCATION OF MAXIMUM THICKNESS AS A FRACTION OF MEAN LINE.)
CORD  = 2.0378   (CHORD OR MERIDIONAL CHORD OF SECTION.)

NORMALISED RESULTS - ALL THE FOLLOWING REFER TO ABLADE HAVING A MERIDIONAL CHORD PROJECTION OF UNITY
**************************************************************************************************

BLADE CHORD   = 1.5616

STAGGER ANGLE = -58.317

CAMBER ANGLE  = -44.326

SECTION AREA  = .07214

LOCATION OF CENTROID RELATIVE TO LEADING EDGE

XBAR = .48846
YBAR = -.77027

SECOND MOMENTS OF AREA ABOUT CENTROID

IX  = .00637
IY  = .00413
IXY = -.00500

ANGLE OF INCLINATION OF (ONE) PRINCIPAL AXIS TO 'X' AXIS = 38.664

PRINCIPAL SECOND MOMENTS OF AREA ABOUT CENTROID

IPX = .01037   (AT 38.664 WITH 'X' AXIS)
IPY = .00013   (AT 38.664 WITH 'Y' AXIS)

| POINT NUMBER | MEANLINE DATA X | Y | ANGLE | THICKNESS | SURFACE COORDINATE DATA XS | YS | XP | YP |
|---|---|---|---|---|---|---|---|---|
| 1  | .00258 | 0.00000 | -63.185 | .00515 | .00486 | .00116  | .00028 | -.00116 |
| 2  | .01516 | -.02489 | -63.177 | .00735 | .01844 | -.02323 | .01188 | -.02655 |
| 3  | .02774 | -.04976 | -63.154 | .00954 | .03200 | -.04761 | .02348 | -.05192 |
| 4  | .04032 | -.07468 | -63.114 | .01173 | .04555 | -.07195 | .03509 | -.07725 |
| 5  | .05290 | -.09939 | -63.060 | .01390 | .05910 | -.09624 | .04671 | -.10254 |
| 6  | .06549 | -.12411 | -62.990 | .01606 | .07264 | -.12046 | .05833 | -.12775 |
| 7  | .07807 | -.14875 | -62.905 | .01619 | .08617 | -.14460 | .06997 | -.15289 |
| 8  | .09065 | -.17329 | -62.806 | .02031 | .09968 | -.16865 | .08162 | -.17793 |
| 9  | .10323 | -.19772 | -62.692 | .02240 | .11318 | -.19258 | .09328 | -.20286 |
| 10 | .11581 | -.22202 | -62.564 | .02446 | .12667 | -.21639 | .10496 | -.22766 |
| 11 | .12840 | -.24618 | -62.421 | .02649 | .14013 | -.24005 | .11666 | -.25232 |
| 12 | .14098 | -.27019 | -62.263 | .02848 | .15358 | -.26357 | .12838 | -.27682 |
| 13 | .15356 | -.29403 | -62.091 | .03043 | .16701 | -.28691 | .14011 | -.30116 |
| 14 | .16614 | -.31770 | -61.904 | .03234 | .18041 | -.31008 | .15188 | -.32531 |
| 15 | .17872 | -.34117 | -61.703 | .03421 | .19379 | -.33306 | .16366 | -.34928 |

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SURFACE COORDINATE DATA

MEANLINE DATA

| POINT NUMBER | X | Y | ANGLE | THICKNESS | XS | YS | XP | YP |
|---|---|---|---|---|---|---|---|---|
| 16 | .19131 | -.36643 | -61.487 | .03603 | .20714 | -.35593 | .17547 | -.37303 |
| 17 | .20389 | -.38748 | -61.255 | .03781 | .22046 | -.37339 | .18731 | -.39657 |
| 18 | .21647 | -.41031 | -61.009 | .03953 | .23376 | -.40073 | .19918 | -.41989 |
| 19 | .22905 | -.43289 | -60.748 | .04120 | .24702 | -.42233 | .21108 | -.44296 |
| 20 | .24163 | -.45523 | -60.471 | .04281 | .26026 | -.44468 | .22301 | -.46578 |
| 21 | .25422 | -.47731 | -60.179 | .04437 | .27346 | -.46628 | .23497 | -.48835 |
| 22 | .26680 | -.49913 | -59.870 | .04588 | .28664 | -.48762 | .24696 | -.51064 |
| 23 | .27939 | -.52067 | -59.546 | .04732 | .29973 | -.50808 | .25898 | -.53266 |
| 24 | .29196 | -.54192 | -59.205 | .04871 | .31289 | -.52946 | .27104 | -.55439 |
| 25 | .30454 | -.56289 | -58.847 | .05003 | .32595 | -.54995 | .28313 | -.57583 |
| 26 | .31712 | -.58355 | -58.473 | .05130 | .33899 | -.57014 | .29526 | -.59696 |
| 27 | .32971 | -.60391 | -58.081 | .05250 | .35199 | -.59003 | .30743 | -.61779 |
| 28 | .34229 | -.62395 | -57.672 | .05364 | .36495 | -.60950 | .31963 | -.63829 |
| 29 | .35487 | -.64367 | -57.245 | .05472 | .37788 | -.62986 | .33186 | -.65847 |
| 30 | .36745 | -.65307 | -56.799 | .05573 | .39077 | -.64780 | .34413 | -.67832 |
| 31 | .38003 | -.66212 | -56.336 | .05669 | .40363 | -.66540 | .35644 | -.69783 |
| 32 | .39262 | -.70054 | -55.953 | .05758 | .41644 | -.68468 | .36879 | -.71700 |
| 33 | .40520 | -.71922 | -55.351 | .05841 | .42922 | -.70261 | .38117 | -.73582 |
| 34 | .41778 | -.73725 | -54.629 | .05918 | .44197 | -.72020 | .39359 | -.75429 |
| 35 | .43036 | -.75493 | -54.258 | .05989 | .45463 | -.73745 | .40605 | -.77241 |
| 36 | .44294 | -.77225 | -53.727 | .06055 | .46735 | -.75434 | .41854 | -.79016 |
| 37 | .45553 | -.78922 | -53.145 | .06114 | .47999 | -.77088 | .43107 | -.80755 |
| 38 | .46811 | -.80562 | -52.543 | .06167 | .49259 | -.78707 | .44363 | -.82457 |
| 39 | .48069 | -.82206 | -51.920 | .06215 | .50515 | -.80289 | .45623 | -.84123 |
| 40 | .49327 | -.83793 | -51.276 | .06257 | .51768 | -.81836 | .46886 | -.85751 |
| 41 | .50585 | -.85344 | -50.611 | .06294 | .53017 | -.83347 | .48153 | -.87341 |
| 42 | .51844 | -.86858 | -49.925 | .06325 | .54263 | -.84822 | .49424 | -.88894 |
| 43 | .53102 | -.88335 | -49.217 | .06351 | .55506 | -.86261 | .50697 | -.90409 |
| 44 | .54360 | -.89775 | -48.483 | .06372 | .56745 | -.87664 | .51974 | -.91887 |
| 45 | .55618 | -.91178 | -47.739 | .06388 | .57982 | -.89030 | .53254 | -.93326 |
| 46 | .56875 | -.92544 | -46.969 | .06399 | .59215 | -.90361 | .54535 | -.94728 |
| 47 | .58134 | -.93874 | -46.178 | .06405 | .60445 | -.91656 | .55824 | -.96091 |
| 48 | .59393 | -.95166 | -45.367 | .06407 | .61572 | -.92916 | .57113 | -.97417 |
| 49 | .60651 | -.96423 | -44.537 | .06404 | .62897 | -.94140 | .58405 | -.98705 |
| 50 | .61909 | -.97643 | -43.688 | .06396 | .64118 | -.95330 | .59700 | -.99955 |
| 51 | .63167 | -.98826 | -42.820 | .06382 | .65335 | -.96486 | .60998 | -1.01167 |
| 52 | .64425 | -.99974 | -41.935 | .06361 | .66551 | -.97608 | .62300 | -1.02341 |
| 53 | .65684 | -1.01087 | -41.036 | .06335 | .67763 | -.98698 | .63604 | -1.03476 |
| 54 | .66942 | -1.02165 | -40.121 | .06301 | .68972 | -.99756 | .64912 | -1.04574 |
| 55 | .68200 | -1.03208 | -39.193 | .06260 | .70173 | -1.00782 | .66222 | -1.05634 |
| 56 | .69458 | -1.04217 | -38.253 | .06211 | .71381 | -1.01778 | .67535 | -1.06655 |
| 57 | .70716 | -1.05192 | -37.304 | .06154 | .72581 | -1.02745 | .68852 | -1.07640 |
| 58 | .71975 | -1.06134 | -36.346 | .06089 | .73779 | -1.03682 | .70170 | -1.08566 |
| 59 | .73233 | -1.07044 | -35.353 | .06016 | .74974 | -1.04592 | .71491 | -1.09496 |
| 60 | .74491 | -1.07922 | -34.416 | .05933 | .76163 | -1.05474 | .72814 | -1.10369 |
| 61 | .75749 | -1.08768 | -33.448 | .05842 | .77353 | -1.06351 | .74139 | -1.11205 |
| 62 | .77007 | -1.09584 | -32.481 | .05742 | .78549 | -1.07152 | .75466 | -1.12006 |
| 63 | .78266 | -1.10370 | -31.519 | .05632 | .79738 | -1.07970 | .76793 | -1.12771 |
| 64 | .79524 | -1.11128 | -30.564 | .05513 | .80925 | -1.08754 | .78122 | -1.13501 |
| 65 | .80782 | -1.11857 | -29.619 | .05384 | .82112 | -1.09516 | .79451 | -1.14197 |
| 66 | .82040 | -1.12558 | -28.687 | .05246 | .83299 | -1.10258 | .80781 | -1.14859 |
| 67 | .83299 | -1.13234 | -27.772 | .05097 | .84486 | -1.10979 | .82111 | -1.15489 |
| 68 | .84556 | -1.13884 | -26.876 | .04938 | .85673 | -1.11682 | .83440 | -1.16086 |
| 69 | .85815 | -1.14510 | -26.004 | .04768 | .86860 | -1.12357 | .84769 | -1.16652 |
| 70 | .87073 | -1.15112 | -25.157 | .04588 | .88043 | -1.13036 | .86098 | -1.17188 |
| 71 | .88331 | -1.15692 | -24.341 | .04396 | .89237 | -1.13689 | .87425 | -1.17694 |

SURFACE COORDINATE DATA

| POINT NUMBER | MEANLINE DATA | | | | XS | YS | XP | YP |
|---|---|---|---|---|---|---|---|---|
| | X | Y | ANGLE | THICKNESS | | | | |
| 72 | .89583 | -1.15251 | -23.557 | .04193 | .90427 | -1.14329 | .88751 | -1.18173 |
| 73 | .90847 | -1.15789 | -22.810 | .03979 | .91513 | -1.14955 | .90076 | -1.18623 |
| 74 | .92105 | -1.17309 | -22.102 | .03754 | .92812 | -1.15570 | .91399 | -1.19048 |
| 75 | .93364 | -1.17812 | -21.437 | .03516 | .94006 | -1.16175 | .92721 | -1.19448 |
| 76 | .94622 | -1.18298 | -20.818 | .03266 | .95202 | -1.16772 | .94042 | -1.19824 |
| 77 | .95880 | -1.18769 | -20.248 | .03003 | .96400 | -1.17360 | .95361 | -1.20178 |
| 78 | .97133 | -1.19226 | -19.730 | .02727 | .97599 | -1.17943 | .96678 | -1.20510 |
| 79 | .98397 | -1.19672 | -19.266 | .02438 | .98799 | -1.18521 | .97994 | -1.20823 |
| 80 | .99655 | -1.20107 | -18.860 | .02136 | 1.00000 | -1.19096 | .99310 | -1.21117 |

STREAMSURFACE GEOMETRY ON STREAMLINE NUMBER 7
******************************************************

P      = 0.0000   (D2YDX2 OF MEANLINE AT LEADING EDGE AS A FRACTION OF ITS MAXIMUM VALUE.)
Q      = .4300    (D2YDX2 OF MEANLINE AT TRAILING EDGE AS A FRACTION OF ITS MAXIMUM VALUE.)
BETA1  =-63.579   (BLADE INLET ANGLE.)
BETA2  =-19.730   (BLADE OUTLET ANGLE.)
YZERO  = .00163   (BLADE LEADING EDGE RADIUS AS A FRACTION OF CHORD.)
T      = .03970   (BLADE MAXIMUM THICKNESS AS A FRACTION OF CHORD.)
YONE   = .00562   (BLADE TRAILING EDGE HALF-THICKNESS AS A FRACTION OF CHORD.)
Z      = .7000    (LOCATION OF MAXIMUM THICKNESS AS A FRACTION OF MEAN LINE.)
CORD   = 2.0241   (CHORD OF MERIDIONAL CHORD OF SECTION.)

NORMALISED RESULTS - ALL THE FOLLOWING REFER TO ABLADE HAVING A MERIDIONAL CHORD PROJECTION OF UNITY
******************************************************

BLADE CHORD   = 1.5313

STAGGER ANGLE =-50.929

CAMBER ANGLE  =-43.799

SECTION AREA  = .07162

LOCATION OF CENTROID RELATIVE TO LEADING EDGE

   XBAR =  .48753
   YBAR = -.73385

SECOND MOMENTS OF AREA ABOUT CENTROID

   IX  =  .00651
   IY  =  .00409
   IXY = -.00507

ANGLE OF INCLINATION OF (ONE) PRINCIPAL AXIS TO 'X' AXIS = 38.038

PRINCIPAL SECOND MOMENTS OF AREA ABOUT CENTROID

   IPX = .01057   (AT 38.038 WITH 'X' AXIS)
   IPY = .00012   (AT 38.038 WITH 'Y' AXIS)

| POINT NUMBER | MEAN LINE DATA | | ANGLE THICKNESS | SURFACE COORDINATE DATA | | | |
|---|---|---|---|---|---|---|---|
| | X | Y | | XS | YS | XP | YP |
| 1 | .00255 | 0.00000-63.579 | .00516 | .00439 | .00115 | .00027 | -.00115 |
| 2 | .01515 | -.02532-63.571 | .00731 | .01843 | -.02369 | .01189 | -.02694 |
| 3 | .02774 | -.05062-63.548 | .00946 | .03197 | -.04951 | .02351 | -.05272 |
| 4 | .04032 | -.07588-63.509 | .01160 | .04551 | -.07330 | .03513 | -.07847 |
| 5 | .05230 | -.10110-63.455 | .01373 | .05904 | -.09803 | .04676 | -.10416 |
| 6 | .06549 | -.12625-63.387 | .01584 | .07256 | -.12270 | .05840 | -.12979 |
| 7 | .07806 | -.15131-63.304 | .01793 | .08607 | -.14728 | .07005 | -.15534 |
| 8 | .09064 | -.17628-63.205 | .02001 | .09957 | -.17177 | .08171 | -.18079 |
| 9 | .10322 | -.20113-63.094 | .02205 | .11306 | -.19614 | .09339 | -.20612 |
| 10 | .11581 | -.22585-62.968 | .02407 | .12653 | -.22039 | .10508 | -.23133 |
| 11 | .12839 | -.25044-62.827 | .02605 | .13998 | -.24449 | .11679 | -.25639 |
| 12 | .14197 | -.27487-62.673 | .02801 | .15341 | -.26844 | .12852 | -.28130 |
| 13 | .15355 | -.29913-62.503 | .02992 | .16682 | -.29222 | .14028 | -.30603 |
| 14 | .16613 | -.32321-62.320 | .03180 | .18021 | -.31582 | .15205 | -.33059 |
| 15 | .17871 | -.34709-62.122 | .03363 | .19757 | -.33923 | .16385 | -.35495 |

| POINT NUMBER | MEANLINE DATA | | | | SURFACE COORDINATE DATA | | | |
|---|---|---|---|---|---|---|---|---|
| | X | Y | ANGLE | THICKNESS | XS | YS | XP | YP |
| 16 | .19123 | -.37077 | -61.910 | .03541 | .20491 | -.36243 | .17567 | -.37910 |
| 17 | .20387 | -.39423 | -61.683 | .03715 | .22022 | -.39542 | .18752 | -.40304 |
| 18 | .21645 | -.41746 | -61.441 | .03C83 | .23351 | -.40818 | .19968 | -.42674 |
| 19 | .22903 | -.44045 | -61.184 | .04047 | .24676 | -.43078 | .21138 | -.45021 |
| 20 | .24161 | -.46319 | -60.912 | .04205 | .25999 | -.45297 | .22324 | -.47342 |
| 21 | .25413 | -.48568 | -60.624 | .04353 | .27318 | -.47499 | .23520 | -.49637 |
| 22 | .26677 | -.50788 | -60.321 | .04505 | .28634 | -.49674 | .24728 | -.51904 |
| 23 | .27935 | -.52982 | -60.003 | .04646 | .29948 | -.51821 | .25923 | -.54144 |
| 24 | .29194 | -.55147 | -59.668 | .04782 | .31257 | -.53940 | .27138 | -.56355 |
| 25 | .30452 | -.57283 | -59.316 | .04912 | .32564 | -.56029 | .28340 | -.58536 |
| 26 | .31710 | -.59387 | -58.949 | .05035 | .33867 | -.58089 | .29553 | -.60686 |
| 27 | .32968 | -.61461 | -58.564 | .05153 | .35166 | -.60118 | .30769 | -.62605 |
| 28 | .34226 | -.63503 | -58.161 | .05265 | .36462 | -.62115 | .31998 | -.64692 |
| 29 | .35484 | -.65513 | -57.742 | .05370 | .37754 | -.64090 | .33213 | -.66946 |
| 30 | .36742 | -.67498 | -57.304 | .05469 | .39043 | -.66013 | .34441 | -.60967 |
| 31 | .38000 | -.69433 | -56.848 | .05563 | .40329 | -.67912 | .35671 | -.70954 |
| 32 | .39258 | -.71342 | -56.373 | .05650 | .41610 | -.69777 | .36856 | -.72956 |
| 33 | .40516 | -.73216 | -55.880 | .05731 | .42888 | -.71689 | .38144 | -.74623 |
| 34 | .41774 | -.75055 | -55.368 | .05806 | .44163 | -.73405 | .39385 | -.76705 |
| 35 | .43032 | -.76859 | -54.835 | .05876 | .45434 | -.75167 | .40631 | -.78551 |
| 36 | .44290 | -.78627 | -54.284 | .05939 | .46701 | -.76833 | .41879 | -.80360 |
| 37 | .45548 | -.80358 | -53.712 | .05997 | .47965 | -.78584 | .43132 | -.82133 |
| 38 | .46807 | -.82053 | -53.119 | .06049 | .49226 | -.80238 | .44307 | -.83068 |
| 39 | .48065 | -.83712 | -52.507 | .06095 | .50483 | -.81857 | .45647 | -.85567 |
| 40 | .49323 | -.85333 | -51.873 | .06136 | .51736 | -.83439 | .46919 | -.87227 |
| 41 | .50581 | -.86918 | -51.219 | .06172 | .52986 | -.84905 | .48175 | -.88050 |
| 42 | .51839 | -.88465 | -50.544 | .06202 | .54233 | -.86494 | .49444 | -.90635 |
| 43 | .53097 | -.89975 | -49.847 | .06227 | .55477 | -.87967 | .50717 | -.91902 |
| 44 | .54355 | -.91447 | -49.130 | .06247 | .56717 | -.89403 | .51993 | -.93491 |
| 45 | .55613 | -.92882 | -48.392 | .06263 | .57954 | -.90803 | .53272 | -.94962 |
| 46 | .56871 | -.94280 | -47.634 | .06273 | .59189 | -.92167 | .54554 | -.96394 |
| 47 | .58129 | -.95641 | -46.855 | .06279 | .60428 | -.93494 | .55839 | -.97788 |
| 48 | .59387 | -.96965 | -46.056 | .06280 | .61648 | -.94786 | .57126 | -.99144 |
| 49 | .60645 | -.98252 | -45.238 | .06277 | .62874 | -.96042 | .58417 | -1.00662 |
| 50 | .61903 | -.99502 | -44.401 | .06264 | .64036 | -.97263 | .59711 | -1.01741 |
| 51 | .63161 | -1.00716 | -43.546 | .06254 | .65316 | -.98450 | .61007 | -1.02903 |
| 52 | .64420 | -1.01894 | -42.674 | .06234 | .66532 | -.99602 | .62387 | -1.04106 |
| 53 | .65678 | -1.03036 | -41.796 | .06207 | .67746 | -1.00722 | .63610 | -1.05350 |
| 54 | .66936 | -1.04143 | -40.863 | .06173 | .68956 | -1.01803 | .64915 | -1.06676 |
| 55 | .68194 | -1.05214 | -39.966 | .06132 | .70163 | -1.02864 | .66224 | -1.07554 |
| 56 | .69452 | -1.06252 | -39.038 | .06084 | .71368 | -1.03889 | .67536 | -1.08614 |
| 57 | .70710 | -1.07255 | -38.100 | .06028 | .72570 | -1.04883 | .68850 | -1.09626 |
| 58 | .71968 | -1.08225 | -37.153 | .05963 | .73769 | -1.05848 | .70167 | -1.10601 |
| 59 | .73225 | -1.09162 | -36.200 | .05898 | .74966 | -1.06785 | .71487 | -1.11538 |
| 60 | .74484 | -1.10066 | -35.243 | .05809 | .76160 | -1.07694 | .72808 | -1.12639 |
| 61 | .75742 | -1.10940 | -34.285 | .05719 | .77353 | -1.08577 | .74131 | -1.13382 |
| 62 | .77000 | -1.11782 | -33.327 | .05621 | .78544 | -1.09434 | .75455 | -1.14130 |
| 63 | .78259 | -1.12594 | -32.374 | .05513 | .79734 | -1.10267 | .76783 | -1.14922 |
| 64 | .79516 | -1.13378 | -31.427 | .05395 | .80923 | -1.11076 | .78110 | -1.15679 |
| 65 | .80775 | -1.14132 | -30.469 | .05269 | .82111 | -1.11862 | .79438 | -1.16402 |
| 66 | .82033 | -1.14859 | -29.564 | .05133 | .83299 | -1.1262 | .80766 | -1.17091 |
| 67 | .83291 | -1.15560 | -28.655 | .04984 | .84486 | -1.13376 | .82095 | -1.17748 |
| 68 | .84543 | -1.16235 | -27.766 | .04664 | .85674 | -1.14085 | .83424 | -1.18372 |
| 69 | .85807 | -1.16885 | -26.690 | .04664 | .86862 | -1.14805 | .84752 | -1.18955 |
| 70 | .87065 | -1.17511 | -26.057 | .04487 | .88050 | -1.15496 | .86079 | -1.19527 |
| 71 | .88323 | -1.18115 | -25.244 | .04300 | .89240 | -1.16171 | .87496 | -1.20060 |

SURFACE COORDINATE DATA

| POINT NUMBER | MEAN LINE DATA | | | | SURFACE COORDINATE DATA | | | |
|---|---|---|---|---|---|---|---|---|
| | X | Y | ANGLE | THICKNESS | XS | YS | XP | YP |
| 72 | .89521 | -1.19699 | -24.464 | .04102 | .90430 | -1.16331 | .88732 | -1.20565 |
| 73 | .90833 | -1.19261 | -23.720 | .03892 | .91622 | -1.17479 | .90056 | -1.21042 |
| 74 | .92097 | -1.18804 | -23.015 | .03672 | .92815 | -1.18114 | .91373 | -1.21494 |
| 75 | .93355 | -1.20336 | -22.352 | .03440 | .94004 | -1.18739 | .92701 | -1.21920 |
| 76 | .94615 | -1.20839 | -21.735 | .03196 | .95205 | -1.19355 | .94022 | -1.22323 |
| 77 | .95871 | -1.21333 | -21.166 | .02939 | .96402 | -1.19963 | .95341 | -1.22704 |
| 78 | .97129 | -1.21814 | -20.647 | .02671 | .97603 | -1.20564 | .96659 | -1.23063 |
| 79 | .94383 | -1.22282 | -20.196 | .02369 | .98800 | -1.21161 | .97975 | -1.23403 |
| 80 | .99644 | -1.22739 | -19.780 | .02094 | 1.00000 | -1.21754 | .99291 | -1.23725 |

STREAMSURFACE GEOMETRY ON STREAMLINE NUMBER 8
●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●

P      = 0.0000    (D2YDX2 OF MEANLINE AT LEADING EDGE AS A FRACTION OF ITS MAXIMUM VALUE.)
Q      = .2530     (D2YDX2 OF MEANLINE AT TRAILING EDGE AS A FRACTION OF ITS MAXIMUM VALUE.)
BETA1  =-64.003    (BLADE INLET ANGLE.)
BETA2  =-20.556    (BLADE OUTLET ANGLE.)
YZERO  = .00161    (BLADE LEADING EDGE RADIUS AS A FRACTION OF CHORD.)
T      = .03948    (BLADE MAXIMUM THICKNESS AS A FRACTION OF CHORD.)
YONE   = .00662    (BLADE TRAILING EDGE HALF-THICKNESS AS A FRACTION OF CHORD.)
Z      = .7030     (LOCATION OF MAXIMUM THICKNESS AS A FRACTION OF MEAN LINE.)
CORD   = 2.0137    (CHORD OR MERIDIONAL CHORD OF SECTION.)

NORMALISED RESULTS - ALL THE FOLLOWING REFER TO A BLADE HAVING A MERIDIONAL CHORD PROJECTION OF UNITY
●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●

BLADE CHORD    = 1.6030

STAGGER ANGLE  =-51.541

CAMBER ANGLE   =-43.447

SECTION AREA   = .07129

LOCATION OF CENTROID RELATIVE TO LEADING EDGE

     XBAR = .40630
     YBAR = -.79019

SECOND MOMENTS OF AREA ABOUT CENTROID

     IX  = .00687
     IY  = .00407
     IXY = -.00516

ANGLE OF INCLINATION OF (ONE) PRINCIPAL AXIS TO 'X' AXIS = 37.402

PRINCIPAL SECOND MOMENTS OF AREA ABOUT CENTROID

     IPX = .01001    (AT 37.402 WITH 'X' AXIS)
     IPY = .00012    (AT 37.402 WITH 'Y' AXIS)

| POINT NUMBER | X | Y | ANGLE | THICKNESS |
|---|---|---|---|---|
| 1 | .00258 | 0.00000 | -64.003 | .00516 |
| 2 | .01516 | -.02579 | -63.995 | .00727 |
| 3 | .02774 | -.05157 | -63.972 | .00938 |
| 4 | .04032 | -.07731 | -63.934 | .01149 |
| 5 | .05290 | -.10300 | -63.881 | .01358 |
| 6 | .06548 | -.12862 | -63.914 | .01566 |
| 7 | .07805 | -.15416 | -63.732 | .01772 |
| 8 | .09064 | -.17959 | -63.636 | .01975 |
| 9 | .10322 | -.20492 | -63.526 | .02176 |
| 10 | .11580 | -.23011 | -63.402 | .02375 |
| 11 | .12838 | -.25516 | -63.264 | .02570 |
| 12 | .14095 | -.28005 | -63.112 | .02762 |
| 13 | .15354 | -.30477 | -62.945 | .02950 |
| 14 | .16612 | -.32931 | -62.765 | .03134 |
| 15 | .17870 | -.35365 | -62.570 | .03313 |

SURFACE COORDINATE DATA

| XS | YS | XP | YP |
|---|---|---|---|
| .00490 | .00113 | .00026 | -.00113 |
| .01043 | -.02420 | .00189 | -.02739 |
| .03196 | -.04951 | .02352 | -.05363 |
| .04548 | -.07479 | .03516 | -.07983 |
| .05900 | -.10001 | .04660 | -.10599 |
| .07250 | -.12516 | .05845 | -.13207 |
| .08600 | -.15024 | .07012 | -.15808 |
| .09949 | -.17521 | .08179 | -.18398 |
| .11296 | -.20006 | .09348 | -.20977 |
| .12642 | -.22679 | .10518 | -.23543 |
| .13985 | -.24938 | .11690 | -.26034 |
| .15327 | -.27381 | .12864 | -.28630 |
| .16667 | -.29806 | .14040 | -.31148 |
| .18005 | -.32214 | .15219 | -.33649 |
| .19340 | -.34612 | .16399 | -.36128 |

| POINT NUMBER | MEANLINE DATA | | | | SURFACE COORDINATE DATA | | | |
|---|---|---|---|---|---|---|---|---|
| | X | Y | ANGLE | THICKNESS | XS | YS | XP | YP |
| 16 | .19128 | -.37775 | 62.361 | .03489 | .20673 | -.36459 | .17582 | -.38587 |
| 17 | .20386 | -.40169 | 62.133 | .03659 | .22003 | -.33314 | .18768 | -.41024 |
| 18 | .21644 | -.42537 | 61.900 | .03425 | .23331 | -.41636 | .19957 | -.43438 |
| 19 | .22902 | -.44881 | 61.647 | .03985 | .24655 | -.43934 | .21148 | -.45627 |
| 20 | .24160 | -.47199 | 61.379 | .04141 | .25977 | -.46207 | .22342 | -.48191 |
| 21 | .25418 | -.49491 | 61.096 | .04291 | .27296 | -.48454 | .23540 | -.50528 |
| 22 | .26675 | -.51756 | 60.798 | .04435 | .28611 | -.50674 | .24740 | -.52838 |
| 23 | .27934 | -.53992 | 60.484 | .04574 | .29924 | -.52865 | .25944 | -.55119 |
| 24 | .29192 | -.56199 | 60.155 | .04707 | .31233 | -.55028 | .27150 | -.57371 |
| 25 | .30450 | -.54377 | 59.809 | .04834 | .32539 | -.57161 | .28361 | -.59592 |
| 26 | .31708 | -.60522 | 59.447 | .04955 | .33841 | -.59254 | .29574 | -.61783 |
| 27 | .32966 | -.62639 | 59.068 | .05070 | .35140 | -.61336 | .30791 | -.63942 |
| 28 | .34224 | -.54722 | 58.672 | .05179 | .36435 | -.63375 | .32011 | -.66068 |
| 29 | .35482 | -.66772 | 58.258 | .05283 | .37723 | -.65342 | .33235 | -.68162 |
| 30 | .36740 | -.68789 | 57.827 | .05380 | .39016 | -.67356 | .34463 | -.70221 |
| 31 | .37994 | -.70771 | 57.374 | .05471 | .40302 | -.69297 | .35693 | -.72246 |
| 32 | .39256 | -.72719 | 56.911 | .05557 | .41583 | -.71203 | .35928 | -.74236 |
| 33 | .40514 | -.7.632 | 56.424 | .05636 | .42861 | -.73074 | .38166 | -.76191 |
| 34 | .41771 | -.75510 | 55.919 | .05710 | .44136 | -.74910 | .39407 | -.78109 |
| 35 | .43029 | -.73351 | 55.395 | .05777 | .45407 | -.76710 | .40652 | -.79991 |
| 36 | .44237 | -.80156 | 54.851 | .05839 | .46675 | -.78475 | .41900 | -.81837 |
| 37 | .45545 | -.81926 | 54.287 | .05895 | .47933 | -.80203 | .43152 | -.83645 |
| 38 | .46803 | -.83655 | 53.703 | .05940 | .49200 | -.81895 | .44407 | -.85415 |
| 39 | .48051 | -.85349 | 53.099 | .05991 | .50457 | -.83551 | .45660 | -.87148 |
| 40 | .49319 | -.87006 | 52.474 | .06031 | .51711 | -.85169 | .45928 | -.88843 |
| 41 | .50577 | -.88625 | 51.828 | .06065 | .52962 | -.86751 | .48193 | -.90499 |
| 42 | .51835 | -.90207 | 51.162 | .06095 | .54203 | -.88236 | .49462 | -.92118 |
| 43 | .53093 | -.91750 | 50.474 | .06119 | .55453 | -.89803 | .50734 | -.93697 |
| 44 | .54351 | -.93256 | 49.76b | .06138 | .56694 | -.91274 | .52008 | -.95238 |
| 45 | .55603 | -.94724 | 49.037 | .06153 | .57432 | -.92707 | .53286 | -.96741 |
| 46 | .56867 | -.96154 | 48.287 | .06162 | .59167 | -.94104 | .54567 | -.98204 |
| 47 | .58125 | -.97546 | 47.517 | .06168 | .60400 | -.95464 | .55851 | -.99629 |
| 48 | .59383 | -.94901 | 46.728 | .06168 | .61629 | -.96737 | .57138 | -1.01015 |
| 49 | .60641 | -1.00219 | 45.918 | .06164 | .62855 | -.98075 | .58427 | -1.02363 |
| 50 | .61899 | -1.01499 | 45.090 | .06156 | .64079 | -.99325 | .59720 | -1.03672 |
| 51 | .63157 | -1.02743 | 44.243 | .06141 | .65300 | -1.05543 | .61015 | -1.04943 |
| 52 | .64415 | -1.03950 | 43.380 | .06120 | .66517 | -1.01726 | .62313 | -1.06174 |
| 53 | .65673 | -1.05122 | 42.500 | .06093 | .57732 | -1.02374 | .63615 | -1.07367 |
| 54 | .56931 | -1.05255 | 41.605 | .06060 | .68943 | -1.03990 | .64913 | -1.08521 |
| 55 | .68199 | -1.17355 | 40.696 | .06019 | .70151 | -1.05073 | .66227 | -1.09636 |
| 56 | .69447 | -1.31449 | 39.775 | .05970 | .71357 | -1.0.125 | .67537 | -1.10714 |
| 57 | .70705 | -1.09449 | 38.943 | .05914 | .72560 | -1.07146 | .68851 | -1.11753 |
| 58 | .71963 | -1.10446 | 37.903 | .05850 | .73760 | -1.08138 | .70166 | -1.12754 |
| 59 | .73221 | -1.11408 | 36.956 | .05778 | .74959 | -1.03100 | .71464 | -1.13717 |
| 60 | .74479 | -1.12339 | 36.004 | .05697 | .76154 | -1.10034 | .72805 | -1.14643 |
| 61 | .75737 | -1.13237 | 35.051 | .05609 | .77343 | -1.10941 | .74127 | -1.15533 |
| 62 | .76995 | -1.14104 | 34.099 | .05511 | .78540 | -1.11922 | .75450 | -1.16366 |
| 63 | .78253 | -1.14941 | 33.148 | .05404 | .79731 | -1.12678 | .76776 | -1.17203 |
| 64 | .79511 | -1.15747 | 32.205 | .05289 | .80920 | -1.13510 | .78102 | -1.17985 |
| 65 | .80709 | -1.15526 | 31.270 | .05164 | .82109 | -1.14319 | .79429 | -1.18732 |
| 66 | .82027 | -1.17276 | 30.347 | .05030 | .83298 | -1.15105 | .80756 | -1.19446 |
| 67 | .3325 | -1.17999 | 29.440 | .04886 | .84486 | -1.15871 | .82084 | -1.20126 |
| 68 | .84543 | -1.13696 | 28.552 | .04733 | .85674 | -1.16618 | .83412 | -1.20775 |
| 69 | .85801 | -1.19368 | 27.685 | .04569 | .86862 | -1.17345 | .84740 | -1.21391 |
| 70 | .87059 | -1.20016 | 24.844 | .04395 | .83051 | -1.18055 | .86066 | -1.21978 |
| 71 | .8317 | -1.20642 | 26.031 | .04212 | .89241 | -1.18749 | .87393 | -1.22534 |

| POINT NUMBER | M E A N L I N E   D A T A | | | | SURFACE COORDINATE DATA | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | X | Y | ANGLE | THICKNESS | XS | YS | XP | YP |
| 72 | .89575 | -1.21246 | -25.251 | .04018 | .90432 | -1.19429 | .88718 | -1.23063 |
| 73 | .90033 | -1.21829 | -24.506 | .03813 | .91624 | -1.20094 | .90042 | -1.23554 |
| 74 | .92091 | -1.22393 | -23.793 | .03597 | .92817 | -1.20747 | .91365 | -1.24039 |
| 75 | .93369 | -1.22939 | -23.135 | .03370 | .94011 | -1.21383 | .92607 | -1.24489 |
| 76 | .94607 | -1.23468 | -22.517 | .03132 | .95207 | -1.22022 | .94087 | -1.24915 |
| 77 | .95865 | -1.23982 | -21.946 | .02801 | .95403 | -1.22646 | .95326 | -1.25319 |
| 78 | .97123 | -1.24483 | -21.428 | .02619 | .97601 | -1.23264 | .96644 | -1.25782 |
| 79 | .98381 | -1.24970 | -20.963 | .02344 | .98808 | -1.23876 | .97961 | -1.26065 |
| 30 | .99633 | -1.25447 | -20.556 | .02057 | 1.00000 | -1.24464 | .99276 | -1.26418 |

STREAMSURFACE GEOMETRY ON STREAMLINE NUMBER 9
●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●

| | | |
|---|---|---|
| P | = 0.0000 | (D2YDX2 OF MEAMLINE AT LEADING EDGE AS A FRACTION OF ITS MAXIMUM VALUE.) |
| Q | = .2500 | (D2YDX2 OF MEANLINE AT TRAILING EDGE AS A FRACTION OF ITS MAXIMUM VALUE.) |
| BETA1 | =-64.470 | (BLADE INLET ANGLE.) |
| BETA2 | =-21.293 | (BLADE OUTLET ANGLE.) |
| YZERO | = .00159 | (BLADE LEADING EDGE RADIUS AS A FRACTION OF CHORD.) |
| T | = .03731 | (BLADE MAXIMUM THICKNESS AS A FRACTION OF CHORD.) |
| YONE | = .00522 | (BLADE TRAILING EDGE HALF-THICKNESS AS A FRACTION OF CHORD.) |
| Z | = .7000 | (LOCATION OF MAXIMUM THICKNESS AS A FRACTION OF MEAN LINE.) |
| CORD | = 2.0055 | (CHORD OR MERIDIONAL CHORD OF SECTION.) |

NORMALISED RESULTS - ALL THE FOLLOWING REFER TO BLADE HAVING A MERIDIONAL CHORD PROJECTION OF UNITY
●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●

BLADE CHORD     = 1.6256

STAGGER ANGLE   =-52.171

CAMBER ANGLE    =-43.267

SECTION AREA    = .07103

LOCATION OF CENTROID RELATIVE TO LEADING EDGE.

XBAR = .48434
YBAR = -.41372

SECOND MOMENTS OF AREA ABOUT CENTROID

IX  = .00717
IY  = .00405
IXY = -.00526

ANGLE OF INCLINATION OF (ONE) PRINCIPAL AXIS TO 'X' AXIS = 36.738

PRINCIPAL SECOND MOMENTS OF AREA ABOUT CENTROID

IPX = .01113     (AT 36.738 WITH 'X' AXIS)
IPY = .00012     (AT 36.738 WITH 'Y' AXIS)

| POINT NUMBER | MEANLINE DATA X | Y | ANGLE THICKNESS | SURFACE COORDINATE DATA XS | YS | XP | YP |
|---|---|---|---|---|---|---|---|
| 1 | .00253 | 0.00000 | -64.470 | .00517 | .00492 | .00111 | .00025 | -.00111 |
| 2 | .01515 | -.02633 | -64.462 | .00725 | .01044 | -.02477 | .01189 | -.02790 |
| 3 | .02776 | -.05265 | -64.440 | .00933 | .03195 | -.05064 | .02353 | -.05466 |
| 4 | .04032 | -.07893 | -64.402 | .01140 | .04545 | -.07547 | .03518 | -.08139 |
| 5 | .05290 | -.10516 | -64.350 | .01346 | .05897 | -.10225 | .04683 | -.10807 |
| 6 | .06543 | -.13132 | -64.284 | .01551 | .07247 | -.12745 | .05850 | -.13468 |
| 7 | .07806 | -.15739 | -64.203 | .01753 | .08595 | -.15358 | .07017 | -.16121 |
| 8 | .09064 | -.18336 | -64.109 | .01954 | .09943 | -.17910 | .08185 | -.18753 |
| 9 | .10322 | -.20922 | -64.001 | .02152 | .11203 | -.20450 | .09355 | -.21394 |
| 10 | .11580 | -.23494 | -63.878 | .02347 | .12633 | -.22978 | .10526 | -.24011 |
| 11 | .12833 | -.26052 | -63.742 | .02539 | .13976 | -.25490 | .11699 | -.26614 |
| 12 | .14035 | -.28594 | -63.592 | .02728 | .15317 | -.27987 | .12874 | -.29200 |
| 13 | .15354 | -.31118 | -63.425 | .02913 | .16656 | -.30457 | .14051 | -.31770 |
| 14 | .16611 | -.33624 | -63.251 | .03094 | .17993 | -.32327 | .15230 | -.34320 |
| 15 | .17863 | -.35109 | -63.059 | .03271 | .19327 | -.35368 | .16411 | -.36850 |

| POINT NUMBER | MEANLINE DATA X | Y | ANGLE | THICKNESS | SURFACE COORDINATE DATA XS | YS | XP | YP |
|---|---|---|---|---|---|---|---|---|
| 16 | .19127 | -.39573 | -62.853 | .03443 | .20659 | -.37708 | .17595 | -.39359 |
| 17 | .20395 | -.41015 | -62.633 | .03611 | .21983 | -.40185 | .18782 | -.41045 |
| 18 | .21643 | -.43434 | -62.399 | .03774 | .23315 | -.42553 | .19971 | -.44308 |
| 19 | .22901 | -.45827 | -62.150 | .03931 | .24639 | -.44909 | .21163 | -.46745 |
| 20 | .24153 | -.48195 | -61.885 | .04104 | .25960 | -.47232 | .22358 | -.49157 |
| 21 | .25417 | -.50536 | -61.607 | .04231 | .27274 | -.49530 | .23556 | -.51542 |
| 22 | .26675 | -.52849 | -61.314 | .04375 | .28593 | -.51799 | .24757 | -.53898 |
| 23 | .27933 | -.55133 | -61.004 | .04534 | .29905 | -.54040 | .25961 | -.56226 |
| 24 | .29191 | -.57388 | -60.679 | .04560 | .31213 | -.56252 | .27168 | -.58524 |
| 25 | .30449 | -.59612 | -60.339 | .04734 | .32519 | -.58433 | .28379 | -.60791 |
| 26 | .31707 | -.61805 | -59.981 | .04733 | .33021 | -.60594 | .29592 | -.63027 |
| 27 | .32964 | -.53966 | -59.608 | .04336 | .35119 | -.62703 | .30810 | -.65230 |
| 28 | .34222 | -.66095 | -59.217 | .05193 | .36415 | -.64789 | .32030 | -.67401 |
| 29 | .35480 | -.63189 | -58.809 | .05205 | .37706 | -.66642 | .33254 | -.69537 |
| 30 | .36738 | -.70250 | -58.384 | .05300 | .38995 | -.68861 | .34482 | -.71639 |
| 31 | .37996 | -.72276 | -57.941 | .05389 | .40280 | -.70846 | .35712 | -.73706 |
| 32 | .39254 | -.74267 | -57.479 | .05473 | .41561 | -.72796 | .36947 | -.75738 |
| 33 | .40512 | -.76222 | -57.000 | .05550 | .42839 | -.74711 | .38185 | -.77733 |
| 34 | .41773 | -.78141 | -56.501 | .05622 | .44114 | -.76589 | .39426 | -.79692 |
| 35 | .43028 | -.80023 | -55.983 | .05688 | .45385 | -.78432 | .40671 | -.81614 |
| 36 | .44286 | -.81868 | -55.445 | .05748 | .46653 | -.80238 | .41919 | -.83498 |
| 37 | .45544 | -.83676 | -54.888 | .05803 | .47917 | -.82007 | .43170 | -.85345 |
| 38 | .46802 | -.85446 | -54.311 | .05852 | .49178 | -.83739 | .44425 | -.87153 |
| 39 | .48060 | -.87178 | -53.713 | .05896 | .50436 | -.85434 | .45683 | -.89923 |
| 40 | .49317 | -.88873 | -53.095 | .05934 | .51690 | -.87091 | .46945 | -.90654 |
| 41 | .50575 | -.90529 | -52.456 | .05968 | .52941 | -.88710 | .48210 | -.92347 |
| 42 | .51833 | -.92146 | -51.796 | .05996 | .54189 | -.90292 | .49478 | -.94000 |
| 43 | .53091 | -.93725 | -51.116 | .06019 | .55434 | -.91836 | .50749 | -.95614 |
| 44 | .54349 | -.95266 | -50.414 | .06037 | .56675 | -.93342 | .52023 | -.97189 |
| 45 | .55607 | -.96768 | -49.691 | .06051 | .57914 | -.94811 | .53300 | -.98725 |
| 46 | .56865 | -.98231 | -48.945 | .06060 | .59150 | -.96242 | .54580 | -1.00221 |
| 47 | .58123 | -.99657 | -48.185 | .06064 | .60383 | -.97635 | .55863 | -1.01678 |
| 48 | .59381 | -1.01046 | -47.401 | .06064 | .61613 | -.98991 | .57149 | -1.03096 |
| 49 | .60639 | -1.02393 | -46.597 | .06060 | .62840 | -1.00311 | .58437 | -1.04475 |
| 50 | .61897 | -1.03704 | -45.774 | .06051 | .64065 | -1.01594 | .59729 | -1.05814 |
| 51 | .63155 | -1.04978 | -44.933 | .06035 | .65286 | -1.02841 | .61023 | -1.07214 |
| 52 | .64412 | -1.06214 | -44.074 | .06014 | .66504 | -1.04054 | .62321 | -1.08375 |
| 53 | .65670 | -1.07414 | -43.199 | .05987 | .67720 | -1.05231 | .63621 | -1.09596 |
| 54 | .66928 | -1.08577 | -42.307 | .05953 | .68932 | -1.06376 | .64925 | -1.10778 |
| 55 | .68186 | -1.09704 | -41.402 | .05911 | .70141 | -1.07497 | .66232 | -1.11921 |
| 56 | .69444 | -1.10795 | -40.484 | .05863 | .71347 | -1.08565 | .67541 | -1.13025 |
| 57 | .70702 | -1.11851 | -39.555 | .05807 | .72551 | -1.09613 | .68853 | -1.14090 |
| 58 | .71960 | -1.12873 | -38.617 | .05743 | .73752 | -1.10630 | .70168 | -1.15117 |
| 59 | .73218 | -1.13861 | -37.671 | .05671 | .74951 | -1.11617 | .71485 | -1.16106 |
| 60 | .74476 | -1.14816 | -36.721 | .05591 | .76147 | -1.12575 | .72804 | -1.17057 |
| 61 | .75734 | -1.15738 | -35.767 | .05503 | .77342 | -1.13506 | .74126 | -1.17970 |
| 62 | .76992 | -1.16628 | -34.814 | .05406 | .78535 | -1.14409 | .75449 | -1.18848 |
| 63 | .78250 | -1.17488 | -33.863 | .05301 | .79725 | -1.15297 | .76773 | -1.19688 |
| 64 | .79508 | -1.18317 | -32.918 | .05146 | .80917 | -1.16140 | .78098 | -1.20494 |
| 65 | .80765 | -1.19117 | -31.981 | .0.1.3 | .82106 | -1.16969 | .79425 | -1.21264 |
| 66 | .82023 | -1.19888 | -31.056 | .0..41 | .83295 | -1.17776 | .80752 | -1.22000 |
| 67 | .83281 | -1.20632 | -30.146 | .04... | .84484 | -1.18561 | .82079 | -1.22703 |
| 68 | .84539 | -1.21350 | -29.254 | .0.... | .85673 | -1.19326 | .83406 | -1.23373 |
| 69 | .85797 | -1.22042 | -28.383 | .0.... | .86662 | -1.20072 | .84733 | -1.24011 |
| 70 | .87055 | -1.22709 | -27.537 | .14.61 | .88051 | -1.20799 | .86059 | -1.24619 |
| 71 | .88313 | -1.23354 | -26.720 | ..-.12 | .89224 | -1.21510 | .87385 | -1.25197 |

POINT
NUMBER

M E A N L I N E   D A T A
X          Y        ANGLE    THIC···SS

SURFACE COORDINATE DATA
XS        YS        XP        YP

| POINT NUMBER | X | Y | ANGLE | THICKNESS SS | XS | YS | XP | YP |
|---|---|---|---|---|---|---|---|---|
| 72 | .89571 | -1.23976 | -25.935 | .03937 | .90432 | -1.22206 | .8871u | -1.25747 |
| 73 | .90829 | -1.24578 | -25.185 | .03737 | .91624 | -1.22867 | .90034 | -1.26268 |
| 74 | .92087 | -1.25160 | -24.473 | .03525 | .92817 | -1.23555 | .91357 | -1.26764 |
| 75 | .93345 | -1.25723 | -23.804 | .03303 | .94011 | -1.24212 | .92675 | -1.27234 |
| 76 | .94603 | -1.26270 | -23.181 | .03070 | .95207 | -1.24859 | .93998 | -1.27681 |
| 77 | .95861 | -1.26801 | -22.606 | .02826 | .96404 | -1.25497 | .95317 | -1.28105 |
| 78 | .97119 | -1.27318 | -22.082 | .02570 | .97602 | -1.26127 | .96635 | -1.28509 |
| 79 | .98376 | -1.27822 | -21.614 | .02302 | .98800 | -1.26752 | .97952 | -1.28892 |
| 80 | .9363+ | -1.23315 | -21.203 | .02022 | 1.00000 | -1.27373 | .99269 | -1.29258 |

STREAMSURFACE GEOMETRY ON STREAMLINE NUMBER 10
•••••••••••••••••••••••••••••••••••••••••••••

| | | |
|---|---|---|
| P | = 0.0000 | (D2YDX2 OF MEANLINE AT LEADING EDGE AS A FRACTION OF ITS MAXIMUM VALUE.) |
| Q | = .2500 | (D2YDX2 OF MEANLINE AT TRAILING EDGE AS A FRACTION OF ITS MAXIMUM VALUE.) |
| BETA1 | =-64.990 | (BLADE INLET ANGLE.) |
| BETA2 | =-21.729 | (BLADE OUTLET ANGLE.) |
| YZERO | = -.00157 | (BLADE LEADING EDGE RADIUS AS A FRACTION OF CHORD.) |
| T | = .03613 | (BLADE MAXIMUM THICKNESS AS A FRACTION OF CHORD.) |
| YONE | = .00602 | (BLADE TRAILING EDGE HALF-THICKNESS AS A FRACTION OF CHORD.) |
| Z | = .7300 | (LOCATION OF MAXIMUM THICKNESS AS A FRACTION OF MEAN LINE.) |
| CORD | = 2.0024 | (CHORD OR MERIDIONAL CHORD OF SECTION.) |

NORMALISED RESULTS - ALL THE FOLLOWING REFER TO ABLADE HAVING A MERIDIONAL CHORD PROJECTION OF UNITY
•••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••

BLADE CHORD    = 1.6503

STAGGER ANGLE  =-52.835

CAMBER ANGLE   =-43.262

SECTION AREA   = .07099

LOCATION OF CENTROID RELATIVE TO LEADING EDGE

    X3AR = .48315
    YBAR = -.03086

SECOND MOMENTS OF AREA ABOUT CENTROID

    IX  = .00753
    IY  = .00404
    IXY = -.00538

ANGLE OF INCLINATION OF (ONE) PRINCIPAL AXIS TO 'X' AXIS = 36.026

PRINCIPAL SECOND MOMENTS OF AREA ABOUT CENTROID

    IPX = .01144    (AT 36.026 WITH 'X' AXIS)
    IPY = .00012    (AT 36.026 WITH 'Y' AXIS)

| POINT NUMBER | MEANLINE DATA X | Y | ANGLE THICKNESS | SURFACE COORDINATE DATA XS | YS | XP | YP |
|---|---|---|---|---|---|---|---|
| 1 | .00260 | 0.00000 | -64.990 | .00520 | .00495 | .00110 | .00024 | -.00110 |
| 2 | .01518 | -.02696 | -64.903 | .00725 | .01846 | -.02543 | .01189 | -.02849 |
| 3 | .02775 | -.05390 | -64.960 | .00930 | .03197 | -.05193 | .02354 | -.05587 |
| 4 | .04033 | -.08081 | -64.923 | .01134 | .04547 | -.07840 | .03520 | -.08321 |
| 5 | .05291 | -.10766 | -64.872 | .01337 | .05896 | -.10462 | .04686 | -.11050 |
| 6 | .06543 | -.13444 | -64.507 | .01530 | .07245 | -.13117 | .05853 | -.13771 |
| 7 | .07807 | -.16113 | -64.728 | .01738 | .08593 | -.15742 | .07021 | -.16484 |
| 8 | .09065 | -.18772 | -64.635 | .01935 | .09939 | -.18358 | .08190 | -.19187 |
| 9 | .10323 | -.21419 | -64.528 | .02131 | .11284 | -.20961 | .09361 | -.21877 |
| 10 | .11581 | -.24053 | -64.408 | .02323 | .12628 | -.23551 | .10533 | -.24554 |
| 11 | .12833 | -.26671 | -64.274 | .02512 | .13970 | -.26126 | .11707 | -.27216 |
| 12 | .14096 | -.29273 | -64.126 | .02698 | .15310 | -.28685 | .12863 | -.29862 |
| 13 | .15354 | -.31858 | -63.965 | .02880 | .16648 | -.31226 | .14061 | -.32490 |
| 14 | .16612 | -.34423 | -63.789 | .03058 | .17984 | -.33748 | .15240 | -.35098 |
| 15 | .17870 | -.36968 | -63.601 | .03232 | .19318 | -.36249 | .16423 | -.37686 |

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| POINT NUMBER | MEANLINE DATA X | Y | ANGLE | THICKNESS | SURFACE COORDINATE DATA XS | YS | XP | YP |
|---|---|---|---|---|---|---|---|---|
| 16 | .19125 | -.34491 | -63.398 | .03402 | .20649 | -.38729 | .17607 | -.40252 |
| 17 | .20386 | -.41991 | -63.181 | .03566 | .21977 | -.41186 | .18794 | -.42795 |
| 18 | .21644 | -.44466 | -62.950 | .03727 | .23303 | -.43619 | .19984 | -.45314 |
| 19 | .22902 | -.46917 | -62.705 | .03882 | .24626 | -.46027 | .21177 | -.47807 |
| 20 | .24159 | -.49361 | -62.445 | .04032 | .25947 | -.48409 | .22372 | -.50274 |
| 21 | .25417 | -.51738 | -62.170 | .04176 | .27264 | -.50763 | .23571 | -.52713 |
| 22 | .26675 | -.54106 | -61.980 | .04316 | .28578 | -.53059 | .24772 | -.55123 |
| 23 | .27933 | -.55445 | -61.575 | .04449 | .29869 | -.55386 | .25977 | -.57504 |
| 24 | .29191 | -.59754 | -61.254 | .04577 | .31198 | -.57653 | .27184 | -.59855 |
| 25 | .30443 | -.61032 | -60.918 | .04700 | .32502 | -.59933 | .28395 | -.62174 |
| 26 | .31707 | -.63277 | -60.566 | .04616 | .33804 | -.62094 | .29609 | -.64450 |
| 27 | .32965 | -.65490 | -60.197 | .04927 | .35102 | -.64265 | .30827 | -.66714 |
| 28 | .34222 | -.67669 | -59.511 | .05032 | .36397 | -.66404 | .32048 | -.68934 |
| 29 | .35443 | -.63514 | -59.408 | .05131 | .37689 | -.68508 | .33272 | -.71119 |
| 30 | .36738 | -.71924 | -58.983 | .05224 | .38977 | -.70578 | .34500 | -.73270 |
| 31 | .37996 | -.73999 | -58.550 | .05311 | .40261 | -.72613 | .35731 | -.75384 |
| 32 | .39254 | -.76037 | -58.094 | .05392 | .41543 | -.74612 | .35965 | -.77662 |
| 33 | .40512 | -.73039 | -57.519 | .05468 | .42821 | -.76675 | .38203 | -.79503 |
| 34 | .41770 | -.80004 | -57.126 | .05538 | .44095 | -.79501 | .39444 | -.81507 |
| 35 | .43024 | -.81932 | -56.613 | .05602 | .45366 | -.80390 | .40689 | -.83473 |
| 36 | .44245 | -.33821 | -56.081 | .05661 | .46634 | -.82242 | .41937 | -.85401 |
| 37 | .45543 | -.45673 | -55.529 | .05714 | .47899 | -.84056 | .43188 | -.87290 |
| 38 | .46401 | -.57486 | -54.957 | .05761 | .49160 | -.85832 | .44443 | -.89140 |
| 39 | .48063 | -.89260 | -54.365 | .05803 | .50417 | -.87569 | .45701 | -.90951 |
| 40 | .49317 | -.90995 | -53.752 | .05840 | .51672 | -.89268 | .46962 | -.92722 |
| 41 | .50577 | -.92591 | -53.113 | .05872 | .52923 | -.90929 | .48226 | -.94453 |
| 42 | .51833 | -.94348 | -52.463 | .05899 | .54172 | -.92551 | .43494 | -.96145 |
| 43 | .53091 | -.95965 | -51.767 | .05921 | .55417 | -.94134 | .50764 | -.97797 |
| 44 | .54344 | -.97543 | -51.090 | .05939 | .56659 | -.95678 | .52038 | -.99408 |
| 45 | .55606 | -.99082 | -50.372 | .05951 | .57698 | -.97194 | .53315 | -1.00960 |
| 46 | .56864 | -1.03581 | -49.633 | .05959 | .59134 | -.98652 | .54594 | -1.02511 |
| 47 | .58122 | -1.02042 | -48.872 | .05963 | .60368 | -1.00081 | .55876 | -1.04003 |
| 48 | .59380 | -1.03463 | -48.092 | .05962 | .61599 | -1.01471 | .57161 | -1.05454 |
| 49 | .50639 | -1.04845 | -47.291 | .05957 | .62825 | -1.02824 | .58449 | -1.06865 |
| 50 | .61895 | -1.05188 | -46.471 | .05947 | .64051 | -1.04140 | .59740 | -1.08236 |
| 51 | .63154 | -1.07493 | -45.631 | .05931 | .65273 | -1.05419 | .61034 | -1.09567 |
| 52 | .64411 | -1.08760 | -44.774 | .05909 | .66492 | -1.06563 | .62331 | -1.10857 |
| 53 | .65669 | -1.09989 | -43.899 | .05881 | .67703 | -1.07470 | .63630 | -1.12104 |
| 54 | .66927 | -1.11181 | -43.008 | .05846 | .68921 | -1.09043 | .64933 | -1.13319 |
| 55 | .68185 | -1.12336 | -42.102 | .05804 | .70131 | -1.10133 | .66239 | -1.14489 |
| 56 | .69443 | -1.13454 | -41.183 | .05756 | .71335 | -1.11239 | .67543 | -1.15620 |
| 57 | .70701 | -1.14537 | -40.252 | .05699 | .72542 | -1.12362 | .68860 | -1.16712 |
| 58 | .71953 | -1.15585 | -39.311 | .05635 | .73744 | -1.13404 | .70174 | -1.17765 |
| 59 | .73217 | -1.15597 | -38.362 | .05564 | .74943 | -1.14416 | .71490 | -1.18779 |
| 60 | .74474 | -1.17576 | -37.407 | .05484 | .76140 | -1.15398 | .72809 | -1.19754 |
| 61 | .75732 | -1.13521 | -36.449 | .05396 | .77335 | -1.16351 | .74129 | -1.20692 |
| 62 | .76990 | -1.17434 | -35.490 | .05300 | .78523 | -1.17277 | .75452 | -1.21592 |
| 63 | .78245 | -1.20316 | -34.534 | .05196 | .79721 | -1.18175 | .76775 | -1.22456 |
| 64 | .79506 | -1.21166 | -33.581 | .05083 | .80912 | -1.19049 | .78100 | -1.23283 |
| 65 | .80764 | -1.21986 | -32.637 | .04961 | .82102 | -1.19897 | .79426 | -1.24075 |
| 66 | .82022 | -1.22777 | -31.704 | .04831 | .83291 | -1.20722 | .80752 | -1.24832 |
| 67 | .83280 | -1.23541 | -30.785 | .04692 | .84430 | -1.21525 | .82079 | -1.25556 |
| 68 | .84537 | -1.24277 | -29.884 | .04543 | .85669 | -1.22307 | .83406 | -1.26246 |
| 69 | .85795 | -1.24987 | -29.004 | .04386 | .86659 | -1.23069 | .84732 | -1.26904 |
| 70 | .87053 | -1.25672 | -28.149 | .04219 | .88043 | -1.23812 | .86058 | -1.27531 |
| 71 | .88311 | -1.26335 | -27.322 | .04042 | .89239 | -1.24538 | .87383 | -1.28129 |

POINT NUMBER | MEANLINE DATA | | | | SURFACE COORDINATE DATA | | | |
---|---|---|---|---|---|---|---|---
 | X | Y | ANGLE | THICKNESS | XS | YS | XP | YP
72 | .89569 | -1.26972 | -26.527 | .03856 | .90430 | -1.25247 | .89708 | -1.28697
73 | .90827 | -1.27589 | -25.768 | .03659 | .91622 | -1.25942 | .90031 | -1.29237
74 | .92085 | -1.28187 | -25.047 | .03453 | .92816 | -1.26623 | .91354 | -1.29751
75 | .93343 | -1.28765 | -24.369 | .03236 | .94010 | -1.27291 | .92675 | -1.30239
76 | .94600 | -1.29327 | -23.736 | .03009 | .95206 | -1.27950 | .93995 | -1.30704
77 | .95859 | -1.23872 | -23.153 | .02771 | .96403 | -1.28598 | .95314 | -1.31146
78 | .97116 | -1.30403 | -22.621 | .02521 | .97601 | -1.29239 | .96631 | -1.31567
79 | .9837+ | -1.30321 | -22.146 | .02260 | .98800 | -1.29874 | .97948 | -1.31958
80 | .99632 | -1.31427 | -21.723 | .01989 | 1.80000 | -1.30504 | .93264 | -1.32351

STREAMSURFACE GEOMETRY ON STREAMLINE NUMBER 11
**********************************************

| | | |
|---|---|---|
| P | = 0.0000 | (D2YDX2 OF MEANLINE AT LEADING EDGE AS A FRACTION OF ITS MAXIMUM VALUE.) |
| Q | = .2500 | (D2YDX2 OF MEANLINE AT TRAILING EDGE AS A FRACTION OF ITS MAXIMUM VALUE.) |
| BETA1 | =-65.570 | (BLADE INLET ANGLE.) |
| BETA2 | =-22.108 | (BLADE OUTLET ANGLE.) |
| YZERO | = .00156 | (BLADE LEADING EDGE RADIUS AS A FRACTION OF CHORD.) |
| T | = .03503 | (BLADE MAXIMUM THICKNESS AS A FRACTION OF CHORD.) |
| YONE | = .00584 | (BLADE TRAILING EDGE HALF-THICKNESS AS A FRACTION OF CHORD.) |
| Z | = .7030 | (LOCATION OF MAXIMUM THICKNESS AS A FRACTION OF MEAN LINE.) |
| CORD | = 2.0014 | (CHORD OR MERIDIONAL CHORD OF SECTION.) |

NORMALISED RESULTS - ALL THE FOLLOWING REFER TO A BLADE HAVING A MERIDIONAL CHORD PROJECTION OF UNITY
***************************************************************************************************

BLADE CHORD    = 1.6775

STAGGER ANGLE  =-53.534

CAMBER ANGLE   =-43.462

SECTION AREA   = .07115

LOCATION OF CENTROID RELATIVE TO LEADING EDGE

XBAR = .48037
YBAR = -.84337

SECOND MOMENTS OF AREA ABOUT CENTROID

IX  = .00735
IY  = .00404
IXY = -.00554

ANGLE OF INCLINATION OF (ONE) PRINCIPAL AXIS TO 'X' AXIS = 35.262

PRINCIPAL SECOND MOMENTS OF AREA ABOUT CENTROID

IPX = .01167    (AT 35.262 WITH 'X' AXIS)
IPY = .00013    (AT 35.262 WITH 'Y' AXIS)

| POINT NUMBER | MEANLINE DATA X | Y | ANGLE | THICKNESS | SURFACE COORDINATE DATA XS | YS | XP | YP |
|---|---|---|---|---|---|---|---|---|
| 1 | .00262 | 0.00000 | -65.570 | .00523 | .00500 | -.00108 | .00023 | -.00108 |
| 2 | .01520 | -.02769 | -65.563 | .00726 | .01450 | -.02518 | .01189 | -.02919 |
| 3 | .02777 | -.05536 | -65.541 | .00929 | .03200 | -.05343 | .02355 | -.05728 |
| 4 | .04035 | -.08299 | -65.504 | .01131 | .04550 | -.08064 | .03521 | -.08533 |
| 5 | .05293 | -.11056 | -65.454 | .01331 | .05899 | -.10730 | .04688 | -.11333 |
| 6 | .06551 | -.13807 | -65.390 | .01531 | .07247 | -.13488 | .05855 | -.14125 |
| 7 | .07809 | -.16548 | -65.312 | .01728 | .08594 | -.16187 | .07024 | -.16909 |
| 8 | .09067 | -.19278 | -65.220 | .01923 | .09940 | -.18875 | .08193 | -.19681 |
| 9 | .10324 | -.21997 | -65.115 | .02116 | .11254 | -.21551 | .09365 | -.22442 |
| 10 | .11582 | -.24701 | -64.996 | .02306 | .12627 | -.24214 | .10537 | -.25199 |
| 11 | .12840 | -.27390 | -64.864 | .02493 | .13963 | -.26861 | .11712 | -.27920 |
| 12 | .14039 | -.30062 | -64.719 | .02675 | .15303 | -.29431 | .12885 | -.30634 |
| 13 | .15356 | -.32716 | -64.560 | .02856 | .16645 | -.32103 | .14066 | -.33330 |
| 14 | .16614 | -.35350 | -64.387 | .03032 | .17981 | -.34695 | .15247 | -.36006 |
| 15 | .17871 | -.37963 | -64.201 | .03204 | .19314 | -.37266 | .16429 | -.38661 |

| POINT NUMBER | MEANLINE DATA | | | | SURFACE COORDINATE DATA | | | |
|---|---|---|---|---|---|---|---|---|
| | X | Y | ANGLE | THICKNESS | XS | YS | XP | YP |
| 16 | .19129 | -.40554 | -64.001 | .03371 | .20644 | -.39815 | .17614 | -.41293 |
| 17 | .20387 | -.43121 | -63.788 | .03534 | .21972 | -.42341 | .18802 | -.43902 |
| 18 | .21645 | -.45664 | -63.560 | .03692 | .23298 | -.44842 | .19992 | -.46485 |
| 19 | .22903 | -.48180 | -63.318 | .03845 | .24621 | -.47317 | .21185 | -.49043 |
| 20 | .24161 | -.50669 | -63.061 | .03992 | .25940 | -.43765 | .22381 | -.51573 |
| 21 | .25419 | -.53130 | -62.790 | .04135 | .27257 | -.52184 | .23580 | -.54075 |
| 22 | .26676 | -.55561 | -62.504 | .04272 | .28571 | -.54575 | .24782 | -.56548 |
| 23 | .27934 | -.57963 | -62.203 | .04403 | .29082 | -.56936 | .25987 | -.58990 |
| 24 | .29192 | -.50333 | -61.886 | .04529 | .31190 | -.59266 | .27195 | -.61400 |
| 25 | .30450 | -.62671 | -61.554 | .04649 | .32494 | -.61564 | .28406 | -.63779 |
| 26 | .31705 | -.64977 | -61.206 | .04764 | .33795 | -.63829 | .29620 | -.66124 |
| 27 | .32966 | -.57248 | -60.841 | .04873 | .35093 | -.66061 | .30838 | -.68435 |
| 28 | .34223 | -.69485 | -60.460 | .04975 | .36388 | -.68259 | .32059 | -.70712 |
| 29 | .35481 | -.71607 | -60.061 | .05072 | .37679 | -.70421 | .33284 | -.72953 |
| 30 | .36739 | -.73853 | -59.645 | .05163 | .38967 | -.72549 | .34511 | -.75158 |
| 31 | .37997 | -.75963 | -59.212 | .05249 | .40251 | -.74639 | .35743 | -.77326 |
| 32 | .39255 | -.78075 | -58.760 | .05328 | .41533 | -.76693 | .36977 | -.79457 |
| 33 | .40513 | -.80130 | -58.290 | .05402 | .42810 | -.78710 | .38215 | -.81550 |
| 34 | .41771 | -.82147 | -57.801 | .05470 | .44085 | -.80669 | .39456 | -.83604 |
| 35 | .43028 | -.84125 | -57.293 | .05532 | .45356 | -.82630 | .40701 | -.85619 |
| 36 | .44256 | -.86064 | -56.765 | .05589 | .46624 | -.84532 | .41949 | -.87596 |
| 37 | .45544 | -.87964 | -56.217 | .05640 | .47888 | -.86396 | .43200 | -.89532 |
| 38 | .46802 | -.89824 | -55.649 | .05606 | .49149 | -.88220 | .44455 | -.91428 |
| 39 | .48060 | -.91645 | -55.060 | .05727 | .50407 | -.90005 | .45712 | -.93285 |
| 40 | .49318 | -.93425 | -54.450 | .05763 | .51662 | -.91750 | .46973 | -.95100 |
| 41 | .50575 | -.95165 | -53.820 | .05793 | .52913 | -.93455 | .48237 | -.96875 |
| 42 | .51833 | -.96865 | -53.168 | .05819 | .54162 | -.95120 | .49505 | -.98609 |
| 43 | .53091 | -.98524 | -52.494 | .05839 | .55407 | -.96746 | .50775 | -1.00301 |
| 44 | .54349 | -1.00142 | -51.799 | .05855 | .56650 | -.98332 | .52048 | -1.01953 |
| 45 | .55607 | -1.01720 | -51.083 | .05867 | .57869 | -.99875 | .53325 | -1.03563 |
| 46 | .56865 | -1.03258 | -50.345 | .05674 | .59126 | -1.01394 | .54604 | -1.05132 |
| 47 | .58122 | -1.04755 | -49.585 | .05876 | .60360 | -1.02851 | .55885 | -1.06660 |
| 48 | .59380 | -1.06213 | -48.805 | .05875 | .61591 | -1.04278 | .57178 | -1.08147 |
| 49 | .60638 | -1.07630 | -48.003 | .05869 | .62819 | -1.05666 | .58457 | -1.09593 |
| 50 | .61896 | -1.09007 | -47.182 | .05857 | .64044 | -1.07016 | .59748 | -1.10997 |
| 51 | .63154 | -1.10345 | -46.340 | .05840 | .65266 | -1.08329 | .61041 | -1.12361 |
| 52 | .64412 | -1.11643 | -45.480 | .05818 | .66486 | -1.09604 | .62338 | -1.13683 |
| 53 | .65670 | -1.12903 | -44.602 | .05788 | .67702 | -1.10842 | .63637 | -1.14964 |
| 54 | .66927 | -1.14124 | -43.706 | .05753 | .68915 | -1.12045 | .64940 | -1.16204 |
| 55 | .68185 | -1.15308 | -42.795 | .05710 | .70125 | -1.13213 | .66246 | -1.17403 |
| 56 | .69443 | -1.16454 | -41.870 | .05661 | .71332 | -1.14346 | .67554 | -1.18561 |
| 57 | .70701 | -1.17563 | -40.932 | .05604 | .72537 | -1.15446 | .68865 | -1.19680 |
| 58 | .71959 | -1.18635 | -39.983 | .05539 | .73738 | -1.16513 | .70179 | -1.20758 |
| 59 | .73217 | -1.13673 | -39.025 | .05467 | .74938 | -1.17549 | .71495 | -1.21796 |
| 60 | .74474 | -1.20675 | -38.060 | .05388 | .76135 | -1.18554 | .72814 | -1.22795 |
| 61 | .75732 | -1.21643 | -37.092 | .05300 | .77331 | -1.19529 | .74134 | -1.23756 |
| 62 | .76990 | -1.22577 | -36.121 | .05205 | .78524 | -1.20475 | .75456 | -1.24679 |
| 63 | .78243 | -1.23479 | -35.152 | .05101 | .79716 | -1.21393 | .76780 | -1.25564 |
| 64 | .79505 | -1.24349 | -34.187 | .04989 | .80907 | -1.22285 | .78104 | -1.26412 |
| 65 | .80764 | -1.25188 | -33.229 | .04868 | .82098 | -1.23152 | .79430 | -1.27224 |
| 66 | .82021 | -1.25997 | -32.281 | .04740 | .83287 | -1.23994 | .80756 | -1.28001 |
| 67 | .83273 | -1.26777 | -31.347 | .04602 | .84476 | -1.24812 | .82082 | -1.28743 |
| 68 | .84537 | -1.27530 | -30.431 | .04456 | .85666 | -1.25609 | .83409 | -1.29451 |
| 69 | .85735 | -1.28256 | -29.535 | .04301 | .86855 | -1.26385 | .84735 | -1.30127 |
| 70 | .87053 | -1.23956 | -28.664 | .04137 | .88045 | -1.27141 | .86061 | -1.30770 |
| 71 | .88311 | -1.29631 | -27.622 | .03964 | .89236 | -1.27879 | .87386 | -1.31384 |

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| POINT NUMBER | M E A N L I N E  D A T A | | | |
|---|---|---|---|---|
| | X | Y | ANGLE | THICKNESS |
| 72 | .89569 | -1.30284 | -27.011 | .03781 |
| 73 | .90825 | -1.30914 | -26.236 | .03589 |
| 74 | .92084 | -1.31524 | -25.500 | .03387 |
| 75 | .93342 | -1.32114 | -24.807 | .03175 |
| 76 | .94600 | -1.32687 | -24.161 | .02953 |
| 77 | .95859 | -1.33243 | -23.565 | .02721 |
| 78 | .97116 | -1.33785 | -23.021 | .02478 |
| 79 | .98373 | -1.34313 | -22.535 | .02224 |
| 30 | .99631 | -1.34629 | -22.103 | .01953 |

SURFACE COORDINATE DATA

| XS | YS | XP | YP |
|---|---|---|---|
| .90427 | -1.28539 | .88710 | -1.31968 |
| .91620 | -1.29305 | .90033 | -1.32524 |
| .92413 | -1.29935 | .91355 | -1.33052 |
| .94008 | -1.30673 | .92676 | -1.33555 |
| .95204 | -1.31340 | .93996 | -1.34034 |
| .96402 | -1.31936 | .95314 | -1.34490 |
| .97600 | -1.32645 | .96631 | -1.34925 |
| .98800 | -1.33296 | .97947 | -1.35340 |
| 1.00000 | -1.33922 | .99263 | -1.35737 |

STREAMSURFACE GEOMETRY ON STREAMLINE NUMBER 12
●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●

| | | |
|---|---|---|
| P | = 0.0000 | (D2YDX2 OF MEANLINE AT LEADING EDGE AS A FRACTION OF ITS MAXIMUM VALUE.) |
| Q | = .2500 | (D2YDX2 OF MEANLINE AT TRAILING EDGE AS A FRACTION OF ITS MAXIMUM VALUE.) |
| BETA1 | =-56.239 | (BLADE INLET ANGLE.) |
| BETA2 | =-22.311 | (BLADE OUTLET ANGLE.) |
| VZERO | = .00255 | (BLADE LEADING EDGE RADIUS AS A FRACTION OF CHORD.) |
| T | = .03407 | (BLADE MAXIMUM THICKNESS AS A FRACTION OF CHORD.) |
| YONE | = .00568 | (BLADE TRAILING EDGE HALF-THICKNESS AS A FRACTION OF CHORD.) |
| Z | = .7000 | (LOCATION OF MAXIMUM THICKNESS AS A FRACTION OF MEAN LINE.) |
| CORD | = 2.0034 | (CHORD OR MERIDIONAL CHORD OF SECTION.) |

NORMALISED RESULTS - ALL THE FOLLOWING, REFER TO BLADE HAVING A MERIDIONAL CHORD PROJECTION OF UNITY
●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●

BLADE CHORD    = 1.7075

STAGGER ANGLE  =-56.277

CAMBER ANGLE   =-43.834

SECTION AREA   = .07175

LOCATION OF CENTROID RELATIVE TO LEADING EDGE

    XBAR =  .47839
    YBAR = -.07124

SECOND MOMENTS OF AREA ABOUT CENTROID

    IX  =  .00049
    IY  =  .00406
    IXY = -.00573

ANGLE OF INCLINATION OF (ONE) PRINCIPAL AXIS TO 'X' AXIS = 34.665

PRINCIPAL SECOND MOMENTS OF AREA ABOUT CENTROID

    IPX = .01242    (AT 34.665 WITH 'X' AXIS)
    IPY = .00013    (AT 34.665 WITH 'Y' AXIS)

| POINT NUMBER | MEANLINE DATA X | Y | ANGLE | THICKNESS | SURFACE COORDINATE DATA XS | YS | XP | YP |
|---|---|---|---|---|---|---|---|---|
| 1  | .00264 | 0.00000 | -66.209 | .00526 | .00505 | .08106 | .00022 | -.00106 |
| 2  | .01522 | -.02853 | -66.282 | .00730 | .01052 | -.02706 | .01106 | -.03000 |
| 3  | .02774 | -.05704 | -66.180 | .00331 | .03705 | -.05515 | .02354 | -.05892 |
| 4  | .04037 | -.05550 | -66.144 | .01132 | .04555 | -.09322 | .03520 | -.08779 |
| 5  | .05235 | -.11392 | -66.075 | .01332 | .05904 | -.11122 | .04686 | -.11661 |
| 6  | .06553 | -.14225 | -66.031 | .01530 | .07252 | -.13915 | .05854 | -.14536 |
| 7  | .07811 | -.17058 | -65.955 | .01726 | .08593 | -.16698 | .07023 | -.17401 |
| 8  | .09069 | -.19893 | -65.904 | .01920 | .09945 | -.19470 | .08192 | -.20256 |
| 9  | .10329 | -.22663 | -65.761 | .02112 | .11243 | -.22238 | .09363 | -.23097 |
| 10 | .11554 | -.25458 | -65.644 | .02301 | .12632 | -.24975 | .10436 | -.25924 |
| 11 | .12842 | -.28220 | -65.514 | .02497 | .13974 | -.27705 | .11710 | -.28735 |
| 12 | .14101 | -.30373 | -65.370 | .02669 | .15313 | -.30417 | .12887 | -.31529 |
| 13 | .15359 | -.33707 | -65.216 | .02864 | .16650 | -.33118 | .14065 | -.34304 |
| 14 | .16616 | -.36420 | -65.044 | .03022 | .17995 | -.35782 | .15245 | -.37058 |
| 15 | .17973 | -.39112 | -64.160 | .03193 | .19313 | -.39436 | .16428 | -.39790 |

| POINT NUMBER | MEANLINE DATA | | | | SURFACE COORDINATE DATA | | | |
|---|---|---|---|---|---|---|---|---|
| | X | Y | ANGLE | THICKNESS | XS | YS | XP | YP |
| 16 | .19131 | -.01780 | -64.003 | .03353 | .20649 | -.41062 | .17613 | -.42499 |
| 17 | .20183 | -.02424 | -64.452 | .03520 | .21977 | -.43065 | .16801 | -.45103 |
| 18 | .21047 | -.02043 | -64.227 | .03677 | .23302 | -.46243 | .19991 | -.47842 |
| 19 | .22905 | -.03630 | -63.905 | .03629 | .24625 | -.48735 | .21104 | -.50474 |
| 20 | .24162 | -.05197 | -63.735 | .03975 | .25945 | -.51318 | .22390 | -.53077 |
| 21 | .25420 | -.05732 | -63.467 | .04115 | .27261 | -.53912 | .23574 | -.55651 |
| 22 | .26673 | -.07236 | -63.185 | .04251 | .28572 | -.56277 | .24781 | -.58194 |
| 23 | .27915 | -.03708 | -62.987 | .04361 | .29866 | -.58710 | .25986 | -.60767 |
| 24 | .29173 | -.07143 | -62.576 | .04505 | .31193 | -.61111 | .27194 | -.63105 |
| 25 | .30402 | -.05556 | -62.290 | .04622 | .32494 | -.63479 | .28405 | -.65642 |
| 26 | .31703 | -.05949 | -61.901 | .04737 | .33731 | -.65813 | .30020 | -.68044 |
| 27 | .32967 | -.03247 | -61.540 | .04846 | .35096 | -.68113 | .30835 | -.70421 |
| 28 | .34222 | -.01570 | -61.152 | .04945 | .36391 | -.70377 | .32053 | -.72762 |
| 29 | .35635 | -.01506 | -60.754 | .05041 | .37682 | -.72605 | .33204 | -.75066 |
| 30 | .36761 | -.07065 | -60.350 | .05130 | .38970 | -.74736 | .34512 | -.77333 |
| 31 | .37993 | -.01256 | -59.726 | .05213 | .40254 | -.76350 | .35743 | -.79562 |
| 32 | .34255 | -.01409 | -59.073 | .05291 | .41535 | -.73005 | .15977 | -.81762 |
| 33 | .40514 | -.02523 | -59.011 | .05363 | .42913 | -.81142 | .33215 | -.83903 |
| 34 | .41772 | -.03597 | -58.525 | .05633 | .44047 | -.83130 | .33457 | -.86014 |
| 35 | .43005 | -.03632 | -58.020 | .05490 | .45354 | -.85178 | .40701 | -.88086 |
| 36 | .44211 | -.06626 | -57.495 | .05546 | .46626 | -.87136 | .41949 | -.90116 |
| 37 | .45545 | -.05079 | -56.969 | .05595 | .47990 | -.89054 | .43200 | -.92105 |
| 38 | .46505 | -.02492 | -56.383 | .05640 | .49152 | -.90931 | .44455 | -.94053 |
| 39 | .48061 | -.04363 | -55.797 | .05673 | .50402 | -.92767 | .45713 | -.95959 |
| 40 | .49318 | -.06193 | -55.149 | .05713 | .51604 | -.94562 | .46974 | -.97824 |
| 41 | .50577 | -.07981 | -54.559 | .05742 | .52915 | -.96317 | .48236 | -.99646 |
| 42 | .51835 | -.07728 | -53.908 | .05766 | .54164 | -.98029 | .49505 | -1.01426 |
| 43 | .53042 | -1.01332 | -53.234 | .05783 | .55410 | -.99701 | .50775 | -1.03163 |
| 44 | .54350 | -1.03095 | -52.539 | .05801 | .56652 | -1.01331 | .52048 | -1.04058 |
| 45 | .55603 | -1.07715 | -51.321 | .05410 | .57892 | -1.04037 | .53324 | -1.06511 |
| 46 | .56856 | -1.09246 | -51.082 | .05816 | .59120 | -1.04657 | .54603 | -1.08121 |
| 47 | .58126 | -1.07531 | -50.320 | .05817 | .60342 | -1.05974 | .55885 | -1.09664 |
| 48 | .59341 | -1.09326 | -49.536 | .05810 | .61595 | -1.07639 | .57170 | -1.11213 |
| 49 | .60633 | -1.11750 | -48.730 | .05807 | .62822 | -1.09855 | .58457 | -1.12695 |
| 50 | .61897 | -1.12193 | -47.301 | .05794 | .64047 | -1.10250 | .59747 | -1.14135 |
| 51 | .63165 | -1.13565 | -47.056 | .05776 | .65253 | -1.11537 | .61041 | -1.15532 |
| 52 | .64411 | -1.15936 | -46.188 | .04752 | .65483 | -1.12905 | .62337 | -1.16997 |
| 53 | .65671 | -1.19187 | -45.301 | .05721 | .67704 | -1.14175 | .63637 | -1.18199 |
| 54 | .66924 | -1.17438 | -44.197 | .05684 | .68917 | -1.15437 | .64940 | -1.19469 |
| 55 | .69170 | -1.14650 | -43.475 | .05640 | .70127 | -1.16904 | .66246 | -1.20597 |
| 56 | .69444 | -1.19824 | -42.534 | .05590 | .71334 | -1.17754 | .67555 | -1.21803 |
| 57 | .70707 | -1.20959 | -41.397 | .05532 | .72535 | -1.18330 | .68906 | -1.23027 |
| 58 | .71360 | -1.22056 | -40.024 | .05465 | .73733 | -1.19382 | .70180 | -1.24131 |
| 59 | .73215 | -1.23117 | -35.651 | .05394 | .74934 | -1.21040 | .71497 | -1.25193 |
| 60 | .74475 | -1.21161 | -34.670 | .05313 | .76155 | -1.22067 | .72815 | -1.26215 |
| 61 | .75735 | -1.27130 | -37.683 | .05223 | .77330 | -1.23063 | .74136 | -1.27198 |
| 62 | .76931 | -1.25005 | -36.694 | .05129 | .74524 | -1.24025 | .75458 | -1.28141 |
| 63 | .74243 | -1.27005 | -35.705 | .05026 | .79715 | -1.24995 | .76782 | -1.29065 |
| 64 | .79507 | -1.27493 | -34.719 | .04914 | .80906 | -1.25973 | .78107 | -1.29913 |
| 65 | .80764 | -1.29749 | -33.740 | .04794 | .82096 | -1.26755 | .79433 | -1.30742 |
| 66 | .82022 | -1.02574 | -32.770 | .04666 | .83205 | -1.27612 | .80759 | -1.31536 |
| 67 | .83240 | -1.30369 | -31.914 | .04530 | .84474 | -1.28446 | .82086 | -1.32293 |
| 68 | .84539 | -1.31135 | -30.374 | .04386 | .85663 | -1.29253 | .83413 | -1.33017 |
| 69 | .85790 | -1.31873 | -29.356 | .04232 | .86852 | -1.30039 | .84739 | -1.33707 |
| 70 | .87055 | -1.32585 | -29.062 | .04071 | .88042 | -1.30806 | .85065 | -1.34364 |
| 71 | .88311 | -1.33271 | -28.196 | .03900 | .89233 | -1.31523 | .87390 | -1.34990 |

| POINT NUMBER | MEANLINE DATA | | | | SURFACE COORDINATE DATA | | | |
|---|---|---|---|---|---|---|---|---|
| | X | Y | ANGLE | THICKNESS | XS | YS | XP | YP |
| 72 | .89563 | -1.33934 | -27.362 | .03721 | .90424 | -1.32262 | .88714 | -1.35586 |
| 73 | .90427 | -1.34574 | -26.565 | .03532 | .91617 | -1.32394 | .90037 | -1.36153 |
| 74 | .32085 | -1.35192 | -25.805 | .03334 | .92812 | -1.33691 | .91359 | -1.36693 |
| 75 | .93343 | -1.35791 | -25.094 | .03127 | .94006 | -1.34375 | .92688 | -1.37206 |
| 76 | .94600 | -1.36371 | -24.429 | .02910 | .95202 | -1.35046 | .93999 | -1.37695 |
| 77 | .95859 | -1.3.934 | -23.913 | .02603 | .96480 | -1.35707 | .95317 | -1.38161 |
| 78 | .97115 | -1.37402 | -23.253 | .02645 | .97599 | -1.36358 | .96633 | -1.38605 |
| 79 | .9837. | -1.38015 | -22.752 | .02198 | .98799 | -1.37002 | .97949 | -1.39029 |
| 90 | .99632 | -1.38537 | -22.311 | .01940 | 1.00000 | -1.37640 | .99264 | -1.39434 |

STREAMSUPFACE GEOMETRY ON STREAMLINE NUMBER 13
●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●

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C        =  0.00000   (C2YDX2 OF MEANLINE AT LEADING EDGE AS A FRACTION OF ITS MAXIMUM VALUE.)
Q        =  .2500     (C2YDX2 OF MEANLINE AT TRAILING EDGE AS A FRACTION OF ITS MAXIMUM VALUE.)
BETA1    = -66.842    (BLADE INLET ANGLE.)
BETA2    = -22.317    (BLADE OUTLET ANGLE.)
VZERO    =  .00153    (BLADE LEADING EDGE RADIUS AS A FRACTION OF CHORD.)
T        =  .03417    (BLADE MAXIMUM THICKNESS AS A FRACTION OF CHORD.)
VONL     =  .80553    (BLADE TRAILING EDGE HALF-THICKNESS AS A FRACTION OF CHORD.)
Z        =  .7030     (LOCATION OF MAXIMUM THICKNESS AS A FRACTION OF MEAN LINE.)
CORD     =  2.0008    (CHORD OR MERIDIONAL CHORD OF SECTION.)
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NORMALIZED RESULTS - ALL THE FOLLOWING REFER TO A BLADE HAVING A MERIDIONAL CHORD PROJECTION OF UNITY
●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●

BLADE CHORD   = 1.7395

STAGGER ANGLE = -55.029

CAMBER ANGLE  = -44.565

SECTION AREA  = .07269

LOCATION OF CENTROID RELATIVE TO LEADING EDGE

$X_{BAR}$ = .47544
$Y_{BAR}$ = -.19413

SECOND MOMENTS OF AREA ABOUT CENTROID

$I_X$  =  .00310
$I_Y$  =  .00409
$I_{XY}$ = -.00536

ANGLE OF INCLINATION OF (ONE) PRINCIPAL AXIS TO 'X' AXIS = 33.602

PRINCIPAL SECOND MOMENTS OF AREA ABOUT CENTROID

$I_{PX}$ = .01306   (AT 33.602 WITH 'X' AXIS)
$I_{PY}$ = .00013   (AT 33.602 WITH 'Y' AXIS)

| POINT NUMBER | MEANLINE DATA | | ANGLE THICKNESS | SURFACE COORDINATE DATA | | | |
|---|---|---|---|---|---|---|---|
| | X | Y | | XS | YS | XP | YP |
| 1  | .00266 | 0.00000 | -66.842 | .00532 | .00511 | .00134 | .00021 | -.00104 |
| 2  | .01524 | -.02946 | -66.975 | .00734 | .01861 | -.02802 | .01167 | -.03090 |
| 3  | .02742 | -.05490 | -66.953 | .00935 | .03212 | -.05706 | .02352 | -.06074 |
| 4  | .04043 | -.07830 | -66.815 | .01136 | .04562 | -.08607 | .03518 | -.09054 |
| 5  | .05237 | -.11764 | -66.769 | .01335 | .05911 | -.11501 | .04684 | -.12027 |
| 6  | .06555 | -.1.690 | -66.707 | .01533 | .07259 | -.14367 | .05851 | -.14993 |
| 7  | .07813 | -.17607 | -66.631 | .01729 | .08607 | -.17264 | .07020 | -.17950 |
| 8  | .09071 | -.20512 | -66.542 | .01922 | .09953 | -.20129 | .03189 | -.20594 |
| 9  | .10329 | -.23404 | -66.448 | .02114 | .11297 | -.22991 | .09360 | -.23826 |
| 10 | .11587 | -.26280 | -66.325 | .02302 | .12641 | -.25818 | .10533 | -.26743 |
| 11 | .12844 | -.29141 | -66.197 | .02487 | .13982 | -.28639 | .11707 | -.29643 |
| 12 | .14102 | -.31983 | -66.055 | .02669 | .15322 | -.31441 | .12883 | -.32524 |
| 13 | .15360 | -.34805 | -65.901 | .02847 | .16659 | -.34224 | .14061 | -.35386 |
| 14 | .16618 | -.37606 | -65.733 | .03021 | .17995 | -.36986 | .15241 | -.38227 |
| 15 | .17875 | -.40385 | -65.552 | .03190 | .19328 | -.39725 | .16424 | -.41045 |
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SURFACE COORDINATE DATA, MEANLINE DATA

| POINT NUMBER | X | Y | ANGLE | THICKNESS | XS | YS | XP | YP |
|---|---|---|---|---|---|---|---|---|
| 16 | .19134 | -.43139 | -65.358 | .03355 | .20659 | -.42440 | .17609 | -.43039 |
| 17 | .20391 | -.45868 | -65.149 | .03516 | .21987 | -.45130 | .18796 | -.46607 |
| 18 | .21643 | -.48571 | -64.927 | .03672 | .23312 | -.47793 | .19986 | -.49369 |
| 19 | .22907 | -.51245 | -64.691 | .03822 | .24635 | -.50428 | .21179 | -.52062 |
| 20 | .24165 | -.53890 | -64.441 | .03967 | .25954 | -.53034 | .22375 | -.54746 |
| 21 | .25423 | -.56505 | -64.176 | .04107 | .27271 | -.55610 | .23574 | -.57400 |
| 22 | .26681 | -.59088 | -63.897 | .04241 | .28585 | -.58155 | .24776 | -.60021 |
| 23 | .27935 | -.51639 | -63.603 | .04370 | .29896 | -.60668 | .25981 | -.62611 |
| 24 | .29196 | -.64156 | -63.293 | .04493 | .31203 | -.63147 | .27189 | -.65166 |
| 25 | .30456 | -.65639 | -62.367 | .04610 | .32507 | -.65531 | .28401 | -.67687 |
| 26 | .31712 | -.53006 | -62.625 | .04722 | .33808 | -.68001 | .29615 | -.70172 |
| 27 | .32970 | -.71497 | -62.268 | .04827 | .35106 | -.70374 | .30833 | -.72621 |
| 28 | .34224 | -.73871 | -61.694 | .04927 | .36401 | -.72711 | .32055 | -.75032 |
| 29 | .35465 | -.75207 | -61.562 | .05021 | .37692 | -.75009 | .33279 | -.77405 |
| 30 | .36743 | -.78505 | -61.093 | .05109 | .38973 | -.77270 | .34587 | -.79739 |
| 31 | .38001 | -.80763 | -60.665 | .05191 | .40264 | -.79491 | .35738 | -.82034 |
| 32 | .39259 | -.82981 | -60.220 | .05267 | .41545 | -.81673 | .36973 | -.84289 |
| 33 | .40517 | -.95159 | -59.756 | .05337 | .42822 | -.83915 | .38211 | -.86503 |
| 34 | .41775 | -.87295 | -59.272 | .05402 | .44095 | -.85915 | .39453 | -.84676 |
| 35 | .43032 | -.83391 | -58.769 | .05461 | .45367 | -.87975 | .40698 | -.90806 |
| 36 | .44290 | -.91444 | -58.245 | .05515 | .46635 | -.89993 | .41946 | -.92695 |
| 37 | .45548 | -.93455 | -57.701 | .05563 | .47899 | -.91959 | .43197 | -.94941 |
| 38 | .46806 | -.95423 | -57.136 | .05605 | .49160 | -.93303 | .44452 | -.96944 |
| 39 | .48064 | -.97349 | -56.550 | .05643 | .50413 | -.95734 | .45710 | -.98904 |
| 40 | .49322 | -.99231 | -55.941 | .05675 | .51672 | -.97642 | .46971 | -1.00820 |
| 41 | .50573 | -1.01078 | -55.311 | .05703 | .52924 | -.99447 | .48235 | -1.02693 |
| 42 | .51837 | -1.02866 | -54.658 | .05725 | .54172 | -1.01210 | .49502 | -1.04522 |
| 43 | .53095 | -1.04618 | -53.983 | .05743 | .55419 | -1.02929 | .50772 | -1.06306 |
| 44 | .54353 | -1.06326 | -53.285 | .05756 | .56650 | -1.04605 | .52046 | -1.08047 |
| 45 | .55611 | -1.07991 | -52.563 | .05765 | .57899 | -1.06239 | .53322 | -1.09743 |
| 46 | .56869 | -1.09612 | -51.813 | .05769 | .59136 | -1.07529 | .54601 | -1.11395 |
| 47 | .58126 | -1.11190 | -51.051 | .05769 | .60370 | -1.09376 | .55883 | -1.13003 |
| 48 | .59394 | -1.12724 | -50.260 | .05756 | .61601 | -1.10482 | .57168 | -1.14557 |
| 49 | .60642 | -1.14216 | -49.447 | .05742 | .62329 | -1.12345 | .58455 | -1.16067 |
| 50 | .61900 | -1.15664 | -48.611 | .05722 | .64054 | -1.13766 | .59746 | -1.17563 |
| 51 | .63158 | -1.17070 | -47.753 | .05696 | .65276 | -1.15147 | .61040 | -1.18994 |
| 52 | .64415 | -1.18434 | -46.974 | .05664 | .66494 | -1.16487 | .62337 | -1.20381 |
| 53 | .65673 | -1.19757 | -45.975 | .05625 | .67710 | -1.17788 | .63637 | -1.21725 |
| 54 | .66931 | -1.21037 | -45.056 | .05580 | .68922 | -1.1905 | .64940 | -1.23024 |
| 55 | .68189 | -1.22277 | -44.118 | .05527 | .70131 | -1.20274 | .66247 | -1.24280 |
| 56 | .59447 | -1.23477 | -3.164 | .05468 | .71337 | -1.21461 | .67556 | -1.25493 |
| 57 | .70705 | -1.24637 | -42.194 | .05401 | .72541 | -1.22611 | .68868 | -1.26662 |
| 58 | .71962 | -1.25758 | -41.211 | .05328 | .73742 | -1.23725 | .70183 | -1.27759 |
| 59 | .73220 | -1.25840 | -40.216 | .05246 | .74940 | -1.24806 | .71500 | -1.28874 |
| 60 | .74474 | -1.27885 | -39.212 | .05158 | .75136 | -1.25653 | .72828 | -1.29918 |
| 61 | .75736 | -1.28893 | -38.202 | .05061 | .77331 | -1.26167 | .74261 | -1.30920 |
| 62 | .76934 | -1.24865 | -37.187 | .04957 | .78523 | -1.27849 | .75464 | -1.31861 |
| 63 | .78252 | -1.30802 | -36.171 | .04846 | .79715 | -1.28801 | .76789 | -1.32803 |
| 64 | .79503 | -1.31705 | -35.158 | .04726 | .80905 | -1.29724 | .78114 | -1.33686 |
| 65 | .80767 | -1.32574 | -34.149 | .04599 | .82094 | -1.30619 | .79441 | -1.34530 |
| 66 | .82025 | -1.33412 | -33.150 | .04464 | .83263 | -1.31436 | .80768 | -1.35337 |
| 67 | .83243 | -1.34218 | -32.164 | .04321 | .84471 | -1.32328 | .82095 | -1.36107 |
| 68 | .84541 | -1.34994 | -31.194 | .04169 | .85660 | -1.33146 | .83422 | -1.36842 |
| 69 | .85793 | -1.35741 | -30.245 | .04009 | .86849 | -1.33940 | .84749 | -1.37542 |
| 70 | .87055 | -1.36461 | -29.320 | .04009 | .88038 | -1.34713 | .86075 | -1.38209 |
| 71 | .80314 | -1.37155 | -28.424 | .03841 | .89229 | -1.35465 | .87400 | -1.38844 |

SURFACE COORDINATE DATA

| XS | YS | XP | YP |
|---|---|---|---|
| .90420 | -1.36199 | .84724 | -1.39448 |
| .91613 | -1.36914 | .90047 | -1.40022 |
| .92807 | -1.37514 | .91369 | -1.40568 |
| .94002 | -1.38298 | .92689 | -1.41087 |
| .95199 | -1.38370 | .94008 | -1.41581 |
| .96397 | -1.38630 | .95325 | -1.42051 |
| .97597 | -1.40280 | .96641 | -1.42499 |
| .98798 | -1.40921 | .97956 | -1.42927 |
| 1.00000 | -1.41557 | .99269 | -1.43336 |

M E A R L I N E   D A T A

| POINT NUMBER | X | Y | ANGLE | THICKNESS |
|---|---|---|---|---|
| 72 | .89572 | -1.37823 | -27.560 | .03665 |
| 73 | .90830 | -1.33463 | -26.734 | .03479 |
| 74 | .92089 | -1.39091 | -25.949 | .03285 |
| 75 | .93349 | -1.39693 | -25.208 | .03082 |
| 76 | .94609 | -1.40275 | -24.517 | .02870 |
| 77 | .95869 | -1.40841 | -23.873 | .02648 |
| 78 | .97129 | -1.41390 | -23.297 | .02417 |
| 79 | .98377 | -1.41924 | -22.775 | .02175 |
| 80 | .99635 | -1.42446 | -22.317 | .01924 |

STREAMSURFACE GEOMETRY ON STREAMLINE NUMBER 14
••••••••••••••••••••••••••••••••••••••••••••••••

| | | |
|---|---|---|
| P | = 0.000 | (D2YDX2 OF MEANLINE AT LEADING EDGE AS A FRACTION OF ITS MAXIMUM VALUE.) |
| Q | = .2500 | (D2YDX2 OF MEANLINE AT TRAILING EDGE AS A FRACTION OF ITS MAXIMUM VALUE.) |
| BETA1 | =-67.563 | (BLADE INLET ANGLE.) |
| BETA2 | =-22.129 | (BLADE OUTLET ANGLE.) |
| T | = .00151 | (BLADE LEADING EDGE RADIUS AS A FRACTION OF CHORD.) |
| YZERO | = .03226 | (BLADE MAXIMUM THICKNESS AS A FRACTION OF CHORD.) |
| YONE | = .00537 | (BLADE TRAILING EDGE HALF-THICKNESS AS A FRACTION OF CHORD.) |
| Z | = .7800 | (LOCATION OF MAXIMUM THICKNESS AS A FRACTION OF MEAN LINE.) |
| CORD | = 2.0174 | (CHORD OR MERIDIONAL CHORD OF SECTION.) |

NORMALISED RESULTS - ALL THE FOLLOWING REFER TO BLADE HAVING A MERIDIONAL CHORD PROJECTION OF UNITY
••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••

BLADE CHORD = 1.7725

STAGGER ANGLE =-55.769

CAMBER ANGLE =-45.434

SECTION AREA = .07336

LOCATION OF CENTROID RELATIVE TO LEADING EDGE

XBAR = .47222
YBAR = -.91759

SECOND MOMENTS OF AREA ABOUT CENTROID

IX = .03975
IY = .00412
IXY = -.00619

ANGLE OF INCLINATION OF (ONE) PRINCIPAL AXIS TO 'X' AXIS = 32.758

PRINCIPAL SECOND MOMENTS OF AREA ABOUT CENTROID

IPX = .01373 (AT 32.758 WITH 'X' AXIS)
IPY = .00614 (AT 32.758 WITH 'Y' AXIS)

| POINT NUMBER | M E A N L I N E   D A T A | | ANGLE | THICKNESS | SURFACE COORDINATE DATA | | | |
|---|---|---|---|---|---|---|---|---|
| | X | Y | | | XS | YS | XP | YP |
| 1 | .00269 | 0.00000 | -67.563 | .00537 | .00517 | .00102 | .00020 | -.00102 |
| 2 | .01526 | -.03046 | -67.556 | .00738 | .01069 | -.02905 | .01105 | -.03187 |
| 3 | .02784 | -.06090 | -67.535 | .00939 | .03215 | -.05910 | .02350 | -.06269 |
| 4 | .04042 | -.09129 | -67.500 | .01139 | .04566 | -.08911 | .03516 | -.09347 |
| 5 | .05300 | -.12163 | -67.452 | .01338 | .05918 | -.11906 | .04682 | -.12419 |
| 6 | .06558 | -.15188 | -67.391 | .01535 | .07265 | -.14893 | .05849 | -.15483 |
| 7 | .07815 | -.18203 | -67.316 | .01730 | .08614 | -.17970 | .07018 | -.18537 |
| 8 | .09073 | -.21206 | -67.228 | .01923 | .09960 | -.20834 | .08187 | -.21579 |
| 9 | .10332 | -.24196 | -67.125 | .02114 | .11305 | -.23785 | .09358 | -.24606 |
| 10 | .11589 | -.27169 | -67.014 | .02302 | .12649 | -.26720 | .10530 | -.27619 |
| 11 | .12847 | -.30126 | -66.888 | .02466 | .13991 | -.29638 | .11704 | -.30614 |
| 12 | .14105 | -.33064 | -66.748 | .02667 | .15330 | -.32537 | .12880 | -.33590 |
| 13 | .15363 | -.35981 | -66.596 | .02844 | .16665 | -.35415 | .14058 | -.36545 |
| 14 | .16621 | -.38875 | -66.430 | .03017 | .18004 | -.38272 | .15238 | -.39479 |
| 15 | .17827 | -.41747 | -66.251 | .03186 | .19337 | -.41105 | .16421 | -.42368 |

| POINT NUMBER | MEANLINE DATA X | Y | ANGLE | THICKNESS | SURFACE COORDINATE DATA XS | YS | XP | YP |
|---|---|---|---|---|---|---|---|---|
| 16 | .19137 | -.44593 | -66.059 | .03350 | .20668 | -.43913 | .17606 | -.45272 |
| 17 | .20395 | -.47412 | -65.351 | .03509 | .21996 | -.46695 | .18794 | -.48130 |
| 18 | .21653 | -.50204 | -65.634 | .03664 | .23321 | -.49448 | .19984 | -.50960 |
| 19 | .22910 | -.52967 | -65.400 | .03813 | .24644 | -.52173 | .21177 | -.53760 |
| 20 | .24168 | -.55699 | -65.153 | .03957 | .25964 | -.54867 | .22373 | -.56530 |
| 21 | .25426 | -.58399 | -64.891 | .04095 | .27280 | -.57530 | .23572 | -.59268 |
| 22 | .26694 | -.61067 | -64.614 | .04228 | .28594 | -.60150 | .24774 | -.61973 |
| 23 | .27942 | -.63700 | -64.373 | .04355 | .29905 | -.62757 | .25979 | -.64644 |
| 24 | .29200 | -.66299 | -64.016 | .04477 | .31212 | -.65318 | .27184 | -.67280 |
| 25 | .30458 | -.68862 | -63.693 | .04593 | .32516 | -.67444 | .28394 | -.69879 |
| 26 | .31716 | -.71387 | -63.354 | .04703 | .33817 | -.70333 | .29614 | -.72442 |
| 27 | .32973 | -.73875 | -62.999 | .04806 | .35115 | -.72784 | .30832 | -.74956 |
| 28 | .34231 | -.76324 | -62.627 | .04904 | .36403 | -.75137 | .32054 | -.77452 |
| 29 | .35459 | -.73734 | -62.238 | .04996 | .37703 | -.77570 | .33275 | -.79898 |
| 30 | .36747 | -.81103 | -61.831 | .05083 | .38987 | -.79904 | .34507 | -.82303 |
| 31 | .38005 | -.83432 | -61.406 | .5163 | .40272 | -.82196 | .35738 | -.84667 |
| 32 | .39263 | -.85714 | -60.962 | .05237 | .41552 | -.84447 | .36973 | -.86989 |
| 33 | .40521 | -.87963 | -60.493 | .05306 | .42830 | -.86557 | .38212 | -.89259 |
| 34 | .41773 | -.90165 | -60.017 | .05369 | .44104 | -.88823 | .39454 | -.91526 |
| 35 | .43037 | -.92323 | -59.514 | .05426 | .45374 | -.90947 | .40699 | -.93699 |
| 36 | .44294 | -.94438 | -58.991 | .05477 | .46647 | -.93027 | .41947 | -.95049 |
| 37 | .45552 | -.96509 | -58.447 | .05524 | .47906 | -.95063 | .43199 | -.97954 |
| 38 | .46810 | -.98535 | -57.902 | .05565 | .49167 | -.97055 | .44454 | -1.00014 |
| 39 | .48068 | -1.00516 | -57.295 | .05600 | .50424 | -.99003 | .45712 | -1.02029 |
| 40 | .49325 | -1.02453 | -56.605 | .05631 | .51679 | -1.00906 | .46973 | -1.03999 |
| 41 | .50574 | -1.04434 | -56.052 | .05656 | .52930 | -1.02764 | .48238 | -1.05923 |
| 42 | .51842 | -1.06190 | -55.396 | .05677 | .54179 | -1.04578 | .49505 | -1.07802 |
| 43 | .53100 | -1.07990 | -54.717 | .05693 | .55423 | -1.06346 | .50776 | -1.09634 |
| 44 | .54357 | -1.09745 | -54.014 | .05705 | .56666 | -1.08069 | .52049 | -1.11421 |
| 45 | .55615 | -1.11454 | -53.266 | .05712 | .57905 | -1.09747 | .53326 | -1.13162 |
| 46 | .56873 | -1.13118 | -52.535 | .05715 | .59141 | -1.11330 | .54605 | -1.14857 |
| 47 | .58131 | -1.14737 | -51.759 | .05714 | .60375 | -1.12969 | .55887 | -1.16505 |
| 48 | .59389 | -1.16311 | -50.959 | .05708 | .61606 | -1.14513 | .57172 | -1.18108 |
| 49 | .60647 | -1.17839 | -50.135 | .05697 | .62933 | -1.16013 | .58460 | -1.19665 |
| 50 | .61905 | -1.19323 | -49.287 | .05691 | .64055 | -1.17471 | .59752 | -1.21176 |
| 51 | .63163 | -1.20763 | -48.416 | .05653 | .65279 | -1.18845 | .61046 | -1.22641 |
| 52 | .64421 | -1.22159 | -47.521 | .05632 | .66497 | -1.20257 | .62344 | -1.24060 |
| 53 | .65673 | -1.23511 | -46.605 | .05593 | .67712 | -1.21638 | .63645 | -1.25434 |
| 54 | .66935 | -1.24820 | -45.668 | .05557 | .68925 | -1.22873 | .64943 | -1.26761 |
| 55 | .68194 | -1.26046 | -44.710 | .05510 | .70132 | -1.24128 | .66255 | -1.28044 |
| 56 | .69452 | -1.27310 | -43.734 | .05455 | .71333 | -1.25339 | .67566 | -1.29281 |
| 57 | .70710 | -1.28493 | -42.741 | .05395 | .72541 | -1.26512 | .68873 | -1.30474 |
| 58 | .71963 | -1.29635 | -41.732 | .05327 | .73741 | -1.27546 | .70195 | -1.31623 |
| 59 | .73225 | -1.30737 | -40.711 | .05262 | .74933 | -1.28747 | .71513 | -1.32728 |
| 60 | .74484 | -1.31800 | -39.676 | .05170 | .76134 | -1.29611 | .72833 | -1.33790 |
| 61 | .75742 | -1.32825 | -38.637 | .05061 | .77324 | -1.30840 | .74155 | -1.34309 |
| 62 | .76993 | -1.33812 | -37.591 | .04984 | .78519 | -1.31837 | .75479 | -1.35786 |
| 63 | .78267 | -1.34762 | -36.542 | .04880 | .79710 | -1.32801 | .76805 | -1.36722 |
| 64 | .79515 | -1.35676 | -35.494 | .04768 | .80893 | -1.33735 | .78131 | -1.37617 |
| 65 | .80773 | -1.36556 | -34.453 | .04649 | .82084 | -1.34639 | .79458 | -1.38473 |
| 66 | .82031 | -1.37402 | -33.415 | .04523 | .83276 | -1.35515 | .80785 | -1.39290 |
| 67 | .83249 | -1.34216 | -32.392 | .04389 | .84464 | -1.36363 | .82113 | -1.40069 |
| 68 | .84547 | -1.38999 | -31.385 | .04247 | .85653 | -1.37185 | .83441 | -1.40812 |
| 69 | .45805 | -1.39751 | -30.390 | .04098 | .86841 | -1.37984 | .84768 | -1.41519 |
| 70 | .47062 | -1.40475 | -29.436 | .03941 | .88031 | -1.38759 | .86094 | -1.42191 |
| 71 | .86320 | -1.41172 | -28.503 | .03775 | .89221 | -1.39513 | .87419 | -1.42330 |

SURFACE COORDINATE DATA

| POINT NUMBER | MEANLINE DATA | | | | | SURFACE COORDINATE DATA | | | |
|---|---|---|---|---|---|---|---|---|---|
| | X | Y | ANGLE | THICKNESS | | XS | YS | XP | YP |
| 72 | .03575 | -1.41842 | -27.604 | .03602 | | .90413 | -1.41246 | .83744 | -1.43438 |
| 73 | .90835 | -1.42487 | -26.742 | .03421 | | .91503 | -1.40960 | .90066 | -1.44015 |
| 74 | .92094 | -1.43110 | -25.923 | .03231 | | .92800 | -1.41657 | .91388 | -1.44563 |
| 75 | .93352 | -1.43711 | -25.150 | .03032 | | .33996 | -1.42338 | .92708 | -1.45003 |
| 76 | .34610 | -1.44292 | -24.428 | .02825 | | .9519+ | -1.43006 | .94026 | -1.45578 |
| 77 | .95865 | -1.44854 | -23.761 | .02609 | | .96393 | -1.43660 | .95342 | -1.46048 |
| 78 | .97126 | -1.45400 | -23.153 | .02384 | | .97594 | -1.44304 | .96657 | -1.46496 |
| 79 | .38383 | -1.45930 | -22.608 | .02149 | | .98796 | -1.44933 | .37970 | -1.46922 |
| 80 | .99641 | -1.45448 | -22.129 | .01905 | | 1.00000 | -1.45566 | .99263 | -1.47330 |

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STREAMSURFACE GEOMETRY ON STREAMLINE NUMBER 15
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P      = 0.0010    (D2YDX2 OF MEANLINE AT LEADING EDGE AS A FRACTION OF ITS MAXIMUM VALUE.)
Q      = .2590     (D2YDX2 OF MEANLINE AT TRAILING EDGE AS A FRACTION OF ITS MAXIMUM VALUE.)
BETA1  =-69.244    (BLADE INLET ANGLE.)
BETA2  =-21.633    (BLADE OUTLET ANGLE.)
YZERO  = .00130    (BLADE LEADING EDGE RADIUS AS A FRACTION OF CHORD.)
T      = .03129    (BLADE MAXIMUM THICKNESS AS A FRACTION OF CHORD.)
YONE   = .00521    (BLADE TRAILING EDGE HALF-THICKNESS AS A FRACTION OF CHORD.)
Z      = .7000     (LOCATION OF MAXIMUM THICKNESS AS A FRACTION OF MEAN LINE.)
CORD   = 2.0274    (CHORD OR MERIDIONAL CHORD OF SECTION.)

NORMALISED RESULTS - ALL THE FOLLOWING REFER TO ABLADE HAVING A MERIDIONAL CHORD PROJECTION OF UNITY
*************************************************************************************************

BLADE CHORD    = 1.8071

STAGGER ANGLE  =-56.513

CAMBER ANGLE   =-46.413

SECTION AREA   = .07493

LOCATION OF CENTROID RELATIVE TO LEADING EDGE

   XBAR = .46331
   YBAR = -.94214

SECOND MOMENTS OF AREA ABOUT CENTROID

   IX  = .01044
   IY  = .00414
   IXY = -.00642

ANGLE OF INCLINATION OF (ONE) PRINCIPAL AXIS TO 'X' AXIS = 31.906

PRINCIPAL SECOND MOMENTS OF AREA ABOUT CENTROID

   IPX = .01446   (AT 31.906 WITH 'X' AXIS)
   IPY = .00015   (AT 31.906 WITH 'Y' AXIS)

| POINT NUMBER | MEAN LINE X | Y | ANGLE | THICKNESS |
|---|---|---|---|---|
| 1  | .00271 | 0.00000 | -69.244 | .00542 |
| 2  | .01523 | -.01152 | -69.239 | .00743 |
| 3  | .02747 | -.06302 | -69.216 | .00943 |
| 4  | .04045 | -.07447 | -69.184 | .01142 |
| 5  | .05303 | -.12586 | -68.137 | .01340 |
| 6  | .06561 | -.15717 | -69.073 | .01536 |
| 7  | .07819 | -.18837 | -68.003 | .01731 |
| 8  | .09077 | -.21944 | -67.916 | .01923 |
| 9  | .10335 | -.25037 | -67.817 | .02113 |
| 10 | .11593 | -.29114 | -67.705 | .02300 |
| 11 | .12951 | -.31172 | -67.580 | .02483 |
| 12 | .14109 | -.3.211 | -67.442 | .02663 |
| 13 | .15367 | -.37229 | -67.292 | .02839 |
| 14 | .16625 | -.40223 | -67.129 | .03011 |
| 15 | .17882 | -.43102 | -66.952 | .03179 |

SURFACE COORDINATE DATA

| XS | YS | XP | YP |
|---|---|---|---|
| .00523 | .00100 | .00019 | -.00100 |
| .01074 | -.03014 | .01184 | -.03290 |
| .03225 | -.05127 | .02349 | -.06477 |
| .04575 | -.03235 | .03515 | -.09660 |
| .05925 | -.12337 | .04681 | -.12836 |
| .07274 | -.15430 | .05848 | -.16004 |
| .08521 | -.13513 | .07016 | -.19161 |
| .09964 | -.21583 | .08186 | -.22306 |
| .11313 | -.24638 | .09356 | -.25436 |
| .12657 | -.27678 | .10529 | -.28550 |
| .13993 | -.30699 | .11703 | -.31646 |
| .15339 | -.33700 | .12879 | -.34722 |
| .16676 | -.36601 | .14057 | -.37777 |
| .18012 | -.34638 | .15237 | -.40606 |
| .19345 | -.42570 | .16420 | -.43615 |

SURFACE COORDINATE DATA and MEANLINE DATA

| POINT NUMBER | M E A N L I N E   D A T A | | | | SURFACE COORDINATE DATA | | | |
|---|---|---|---|---|---|---|---|---|
| | X | Y | ANGLE | THICKNESS | XS | YS | XP | YP |
| 16 | .19143 | -.46136 | -66.762 | .03342 | .20676 | -.45476 | .17605 | -.46795 |
| 17 | .20334 | -.43051 | -66.559 | .03500 | .22004 | -.48355 | .18793 | -.49743 |
| 18 | .21655 | -.51938 | -66.342 | .03653 | .23329 | -.51205 | .19983 | -.52671 |
| 19 | .22914 | -.54794 | -66.111 | .03801 | .24652 | -.54024 | .21177 | -.55563 |
| 20 | .24172 | -.57618 | -65.867 | .03944 | .25972 | -.56412 | .22373 | -.58424 |
| 21 | .25430 | -.60409 | -65.607 | .04081 | .27284 | -.59566 | .23572 | -.61252 |
| 22 | .26688 | -.63166 | -65.334 | .04212 | .28602 | -.62297 | .24774 | -.64045 |
| 23 | .27945 | -.65887 | -65.045 | .04338 | .29912 | -.64972 | .25980 | -.66802 |
| 24 | .29204 | -.63572 | -64.740 | .04457 | .31220 | -.67621 | .27189 | -.69523 |
| 25 | .30462 | -.71219 | -64.421 | .04571 | .32524 | -.70232 | .28400 | -.72206 |
| 26 | .31720 | -.73827 | -64.085 | .04679 | .33824 | -.72835 | .29616 | -.74850 |
| 27 | .32973 | -.76396 | -63.732 | .04781 | .35122 | -.75338 | .30834 | -.77454 |
| 28 | .34236 | -.73325 | -63.363 | .04877 | .36416 | -.77832 | .32056 | -.80018 |
| 29 | .35494 | -.81412 | -62.976 | .04969 | .37707 | -.80294 | .33281 | -.82541 |
| 30 | .36752 | -.83857 | -62.571 | .05052 | .38994 | -.82534 | .34510 | -.85021 |
| 31 | .38010 | -.85260 | -62.148 | .05130 | .40274 | -.85061 | .35742 | -.87458 |
| 32 | .39268 | -.85618 | -61.706 | .05202 | .41559 | -.87386 | .36977 | -.89851 |
| 33 | .40526 | -.30933 | -61.245 | .05269 | .42835 | -.89656 | .38216 | -.92201 |
| 34 | .41794 | -.93203 | -60.764 | .05330 | .44109 | -.91902 | .39458 | -.94505 |
| 35 | .43042 | -.95428 | -60.262 | .05385 | .45380 | -.94032 | .40784 | -.96764 |
| 36 | .44300 | -.97687 | -59.740 | .05435 | .46647 | -.96238 | .41953 | -.98977 |
| 37 | .45553 | -.93740 | -59.196 | .05479 | .47911 | -.98337 | .43205 | -1.01143 |
| 38 | .46816 | -1.01827 | -58.629 | .05518 | .49171 | -1.00391 | .44468 | -1.03263 |
| 39 | .48074 | -1.03867 | -58.041 | .05552 | .50429 | -1.02397 | .45718 | -1.05336 |
| 40 | .49331 | -1.05859 | -57.429 | .05580 | .51603 | -1.04357 | .46986 | -1.07362 |
| 41 | .50533 | -1.07805 | -56.794 | .05604 | .52934 | -1.06278 | .48245 | -1.09340 |
| 42 | .51847 | -1.09703 | -56.134 | .05623 | .54182 | -1.08136 | .49513 | -1.11270 |
| 43 | .53105 | -1.11554 | -55.450 | .05638 | .55427 | -1.09955 | .50784 | -1.13152 |
| 44 | .54363 | -1.13357 | -54.742 | .05647 | .56669 | -1.11727 | .52056 | -1.14967 |
| 45 | .55621 | -1.15113 | -54.008 | .05653 | .57908 | -1.13452 | .53334 | -1.16774 |
| 46 | .56879 | -1.16321 | -53.249 | .05654 | .59145 | -1.15129 | .54614 | -1.10513 |
| 47 | .58137 | -1.18482 | -52.464 | .05652 | .60378 | -1.16750 | .55896 | -1.20203 |
| 48 | .59395 | -1.20096 | -51.653 | .05644 | .61608 | -1.18365 | .57182 | -1.21846 |
| 49 | .60653 | -1.21662 | -50.817 | .05632 | .62836 | -1.19883 | .58470 | -1.23441 |
| 50 | .61911 | -1.23182 | -49.956 | .05614 | .64060 | -1.21376 | .59762 | -1.24988 |
| 51 | .63163 | -1.24656 | -49.070 | .05590 | .65281 | -1.22825 | .61057 | -1.26467 |
| 52 | .64427 | -1.26084 | -48.159 | .05560 | .66498 | -1.24229 | .62356 | -1.27938 |
| 53 | .65685 | -1.27466 | -47.224 | .05524 | .67712 | -1.25530 | .63657 | -1.29342 |
| 54 | .66943 | -1.28803 | -46.266 | .05482 | .68923 | -1.26908 | .64962 | -1.30698 |
| 55 | .68201 | -1.30096 | -45.287 | .05433 | .70131 | -1.28105 | .66270 | -1.32007 |
| 56 | .69459 | -1.31346 | -44.286 | .05378 | .71336 | -1.29420 | .67561 | -1.33269 |
| 57 | .70717 | -1.32550 | -43.267 | .05315 | .72535 | -1.30615 | .68895 | -1.34445 |
| 58 | .71975 | -1.33713 | -42.230 | .05246 | .73738 | -1.31771 | .70212 | -1.35655 |
| 59 | .73233 | -1.34834 | -41.179 | .05170 | .74935 | -1.32889 | .71531 | -1.36780 |
| 60 | .74491 | -1.35914 | -40.114 | .05087 | .76129 | -1.33969 | .72852 | -1.37859 |
| 61 | .75743 | -1.36954 | -39.040 | .04997 | .77322 | -1.35014 | .74175 | -1.38895 |
| 62 | .77007 | -1.37955 | -37.958 | .04980 | .78513 | -1.36023 | .75500 | -1.39886 |
| 63 | .78265 | -1.38917 | -36.872 | .04796 | .79703 | -1.36999 | .76826 | -1.40835 |
| 64 | .79523 | -1.39842 | -35.786 | .04685 | .80892 | -1.37942 | .78153 | -1.41742 |
| 65 | .80730 | -1.40731 | -34.703 | .04566 | .82050 | -1.38854 | .79482 | -1.42608 |
| 66 | .82038 | -1.41585 | -33.627 | .04441 | .83268 | -1.39736 | .80809 | -1.43434 |
| 67 | .83296 | -1.42405 | -32.563 | .04308 | .84456 | -1.40589 | .82137 | -1.44220 |
| 68 | .84554 | -1.43192 | -31.514 | .04163 | .85644 | -1.41415 | .83465 | -1.44969 |
| 69 | .85812 | -1.43948 | -30.486 | .04021 | .86832 | -1.42215 | .84792 | -1.45681 |
| 70 | .87070 | -1.44674 | -29.482 | .03867 | .88022 | -1.42931 | .86119 | -1.46357 |
| 71 | .88328 | -1.45371 | -28.508 | .03704 | .89212 | -1.43743 | .87444 | -1.46995 |

SURFACE COORDINATE DATA

| XS | YS | XP | YP |
|---|---|---|---|
| .90404 | -1.46474 | .88768 | -1.47607 |
| .91597 | -1.45185 | .90091 | -1.48185 |
| .92793 | -1.45477 | .91412 | -1.48732 |
| .93989 | -1.46552 | .92731 | -1.49252 |
| .95183 | -1.47213 | .94048 | -1.49744 |
| .96349 | -1.473?9 | .95363 | -1.50212 |
| .97591 | -1.48434 | .96677 | -1.50656 |
| .98795 | -1.49119 | .97989 | -1.51080 |
| 1.30000 | -1.43736 | .99300 | -1.51484 |

MEANLINE DATA

| POINT NUMBER | X | Y | ANGLE | THICKNESS |
|---|---|---|---|---|
| 72 | .89586 | -1.46041 | -27.568 | .03535 |
| 73 | .90844 | -1.46685 | -25.667 | .03357 |
| 74 | .92102 | -1.47305 | -25.809 | .03172 |
| 75 | .93363 | -1.47932 | -25.000 | .02978 |
| 76 | .94619 | -1.48478 | -24.24? | .02776 |
| 77 | .95876 | -1.49036 | -23.545 | .02566 |
| 78 | .97131 | -1.49575 | -22.907 | .02347 |
| 79 | .98392 | -1.50099 | -22.335 | .02120 |
| 80 | .99650 | -1.50610 | -21.933 | .01883 |

BLADE SURFACE GEOMETRY IN CARTESIAN COORDINATES AT SPECIFIED VALUES OF 'Z'
**********************************************************

SECTION NUMBER 1   'Z' = 6.5000
**********************************

SECTION PROPERTIES

SECTION AREA                                      = 3.6466E-01

LOCATION OF CENTROID              XBAR   = 5.2922E-02
RELATIVE TO STACK AXIS           YBAR   = -3.3379E-03

SECOND MOMENTS OF AREA           IX   = 9.3309E-02
ABOUT CENTROID                   IY   = 8.6833E-02
                                 IXY  = -8.5579E-02

PRINCIPAL SECOND MOMENTS         IPX  = 1.7571E-01  (AT  43.92 DEGREES TO 'X' AXIS)
OF AREA ABOUT CENTROID           IPY  = 4.4309E-03  (AT  43.92 DEGREES TO 'Y' AXIS)

TORSIONAL CONSTANT               = 2.7467E-03

SECTION COORDINATES

| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 1 | -3.72091E-01 | 1.45155E+00 | -9.81073E-01 | 1.44573E+00 |
| 2 | -3.64251E-01 | 1.40532E+00 | -9.57636E-01 | 1.39667E+00 |
| 3 | -3.16404E-01 | 1.33915E+00 | -9.34151E-01 | 1.34764E+00 |
| 4 | -3.88070E-01 | 1.31307E+00 | -9.10613E-01 | 1.29868E+00 |
| 5 | -3.60431E-01 | 1.26712E+00 | -8.87020E-01 | 1.24982E+00 |
| 6 | -3.32492E-01 | 1.22133E+00 | -8.63372E-01 | 1.20110E+00 |
| 7 | -3.04454E-01 | 1.17574E+00 | -8.39668E-01 | 1.15256E+00 |
| 8 | -7.76426E-01 | 1.13036E+00 | -8.15910E-01 | 1.10422E+00 |
| 9 | -7.46409E-01 | 1.09526E+00 | -7.92100E-01 | 1.05612E+00 |
| 10 | -7.20422E-01 | 1.04044E+00 | -7.68239E-01 | 1.00829E+00 |
| 11 | -6.92444E-02 | 9.95931E-01 | -7.44329E-01 | 9.60765E-01 |
| 12 | -2.66610E-01 | 9.51785E-01 | -7.20374E-01 | 9.13569E-01 |
| 13 | -6.363222E-01 | 9.07013E-01 | -5.96378E-01 | 3.66732E-01 |
| 14 | -5.09186E-01 | 8.64661E-01 | -6.72344E-01 | 8.20203E-01 |
| 15 | -5.91575E-01 | 8.21735E-01 | -6.48290E-01 | 7.74255E-01 |
| 16 | -5.54154E-01 | 7.74238E-01 | -6.24215E-01 | 7.29672E-01 |
| 17 | -5.26376E-01 | 7.37239E-01 | -6.00125E-01 | 6.83557E-01 |
| 18 | -4.99737E-01 | 6.95755E-01 | -5.76030E-01 | 6.39934E-01 |
| 19 | -4.72729E-01 | 6.54790E-01 | -5.51930E-01 | 5.94827E-01 |
| 20 | -4.45356E-01 | 6.14356E-01 | -5.27825E-01 | 5.51257E-01 |
| 21 | -4.19125E-01 | 5.74517E-01 | -5.03695E-01 | 5.05250E-01 |
| 22 | -3.92522E-01 | 5.35250E-01 | -4.79575E-01 | 4.65823E-01 |
| 23 | -3.66240E-01 | 4.95565E-01 | -4.55431E-01 | 4.23991E-01 |
| 24 | -3.39673E-01 | 4.58548E-01 | -4.31255E-01 | 3.82774E-01 |
| 25 | -3.13415E-01 | 4.21156E-01 | -4.07040E-01 | 3.42189E-01 |
| 26 | -2.87239E-01 | 3.84618E-01 | -3.82761E-01 | 3.02256E-01 |
| 27 | -2.61200E-01 | 3.43356E-01 | -3.58470E-01 | 2.62999E-01 |
| 28 | -2.35231E-01 | 3.12995E-01 | -3.34100E-01 | 2.24421E-01 |
| 29 | -2.093446E-01 | 2.73386E-01 | -3.09659E-01 | 1.85540E-01 |
| 30 | -1.835316E-01 | 2.64339E-01 | -2.85154E-01 | 1.49370E-01 |
| 31 | -1.57790E-01 | 2.11204E-01 | -2.60565E-01 | 1.12934E-01 |
| 32 | -1.32123E-01 | 1.75758E-01 | -2.35882E-01 | 7.72403E-02 |
| 33 | -1.06539E-01 | 1.47072E-01 | -2.11098E-01 | 4.22986E-02 |
| 34 | -9.10527E-02 | 1.15155E-01 | -1.86204E-01 | 6.12113E-03 |

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| POINT NO | X S | Y S | XP | YP |
|---|---|---|---|---|
| 35 | -5.55573E-02 | 8.63996E-02 | -1.61194E-01 | -2.52759E-02 |
| 36 | -4.04343E-02 | 5.67134E-02 | -1.36009E-01 | -5.78774E-02 |
| 37 | -4.32062E-03 | 2.81964E-02 | -1.10835E-01 | -8.96805E-02 |
| 38 | 1.90400E-02 | 5.03706E-04 | -5.55080E-02 | -1.20675E-01 |
| 39 | 4.46558E-02 | -2.63645E-02 | -6.00965E-02 | -1.50847E-01 |
| 40 | 3.90473E-02 | -5.24122E-02 | -3.46091E-02 | -1.50185E-01 |
| 41 | 1.34526E-02 | -7.75233E-02 | -9.06464E-03 | -2.03682E-01 |
| 42 | 1.17675E-01 | -1.01991E-01 | 1.65215E-02 | -2.36316E-01 |
| 43 | 1.41636E-01 | -1.25036E-01 | 4.23326E-02 | -2.63109E-01 |
| 44 | 1.65361E-01 | -1.41156E-01 | 6.77502E-02 | -2.37040E-01 |
| 45 | 1.88326E-01 | -1.63948E-01 | 9.35416E-02 | -3.14101E-01 |
| 46 | 2.11370E-01 | -1.93974E-01 | 1.19322E-01 | -3.38295E-01 |
| 47 | 2.34402E-01 | -2.11730E-01 | 1.44431E-01 | -3.51571E-01 |
| 48 | 2.57319E-01 | -2.31103E-01 | 1.69552E-01 | -3.63964E-01 |
| 49 | 2.79530E-01 | -2.54395E-01 | 1.95156E-01 | -4.05457E-01 |
| 50 | 3.01452E-01 | -2.68005E-01 | 2.20312E-01 | -4.26030E-01 |
| 51 | 3.23035E-01 | -2.83442E-01 | 2.45296E-01 | -4.45670E-01 |
| 52 | 3.44474E-01 | -2.93014E-01 | 2.70093E-01 | -4.64353E-01 |
| 53 | 3.65547E-01 | -3.12919E-01 | 2.94706E-01 | -4.82084E-01 |
| 54 | 3.86506E-01 | -3.25772E-01 | 3.19105E-01 | -4.98126E-01 |
| 55 | 4.07223E-01 | -3.33801E-01 | 3.43590E-01 | -5.14533E-01 |
| 56 | 4.27772E-01 | -3.52556E-01 | 3.67622E-01 | -5.29227E-01 |
| 57 | 4.48143E-01 | -3.65507E-01 | 3.91682E-01 | -5.42857E-01 |
| 58 | 4.68445E-01 | -3.74242E-01 | 4.15652E-01 | -5.54206E-01 |
| 59 | 4.84715E-01 | -3.85067E-01 | 4.39553E-01 | -5.66691E-01 |
| 60 | 5.03973E-01 | -3.93096E-01 | 4.63413E-01 | -5.77233E-01 |
| 61 | 5.24258E-01 | -4.01341E-01 | 4.87264E-01 | -5.86440E-01 |
| 62 | 5.44362E-01 | -4.08714E-01 | 5.11141E-01 | -5.94467E-01 |
| 63 | 5.70155E-01 | -4.15529E-01 | 5.35048E-01 | -6.01335E-01 |
| 64 | 5.90434E-01 | -4.21498E-01 | 5.59152E-01 | -6.06986E-01 |
| 65 | 6.11116E-01 | -4.25736E-01 | 5.83391E-01 | -6.11406E-01 |
| 66 | 6.33124E-01 | -4.31270E-01 | 6.07865E-01 | -6.14569E-01 |
| 67 | 6.54027E-01 | -4.35123E-01 | 6.32637E-01 | -6.16467E-01 |
| 68 | 6.77051E-01 | -4.38323E-01 | 6.57757E-01 | -6.17097E-01 |
| 69 | 6.93435E-01 | -4.41905E-01 | 6.83769E-01 | -6.16412E-01 |
| 70 | 7.23139E-01 | -4.42919E-01 | 7.09218E-01 | -6.14449E-01 |
| 71 | 7.47194E-01 | -4.44413E-01 | 7.36651E-01 | -6.11205E-01 |
| 72 | 7.71414E-01 | -4.54525E-01 | 7.65512E-01 | -6.05691E-01 |
| 73 | 7.97255E-01 | -4.46111E-01 | 7.90146E-01 | -5.00949E-01 |
| 74 | 4.23436E-01 | -4.54766E-01 | 8.13292E-01 | -5.94014E-01 |
| 75 | 3.50572E-01 | -4.63649E-01 | 8.47035E-01 | -5.95961E-01 |
| 76 | 3.73557E-01 | -4.67743E-01 | 8.76548E-01 | -5.76866E-01 |
| 77 | 3.97475E-01 | -4.469305-01 | 9.06697E-01 | -5.66843E-01 |
| 78 | 3.373005-01 | -4.47233E-01 | 9.37531E-01 | -5.56021E-01 |
| 79 | 3.63021E-01 | -4.47920E-01 | 9.69037E-01 | -5.44548E-01 |
| 80 | 3.99535E-01 | -4.43146E-01 | 1.00118E+00 | -5.32584E-01 |

| POINT NO | XSEMI | YSEMI | | |
|---|---|---|---|---|
| 1 | -3.81073E-01 | 1.44573E+00 | | |
| 2 | -3.81312E-01 | 1.44624E+00 | | |
| 3 | -3.81500E-01 | 1.44678E+00 | | |
| 4 | -3.81533E-01 | 1.44733E+00 | | |
| 5 | -3.81712E-01 | 1.44790E+00 | | |
| 6 | -3.81734E-01 | 1.44848E+00 | | |
| 7 | -3.81639E-01 | 1.44905E+00 | | |
| 8 | -3.81609E-01 | 1.44963E+00 | | |

| POINT NO | XSEMI | YSEMI |
|---|---|---|
| 9 | -3.81454E-01 | 1.45019E+00 |
| 10 | -3.81255E-01 | 1.45074E+00 |
| 11 | -3.81014E-01 | 1.45126E+00 |
| 12 | -3.80716E-01 | 1.45176E+00 |
| 13 | -3.80371E-01 | 1.45222E+00 |
| 14 | -3.79986E-01 | 1.45264E+00 |
| 15 | -3.79563E-01 | 1.45302E+00 |
| 16 | -3.79107E-01 | 1.45335E+00 |
| 17 | -3.78624E-01 | 1.45363E+00 |
| 18 | -3.78119E-01 | 1.45385E+00 |
| 19 | -3.77596E-01 | 1.45402E+00 |
| 20 | -3.77063E-01 | 1.45413E+00 |
| 21 | -3.76524E-01 | 1.45417E+00 |
| 22 | -3.75986E-01 | 1.45416E+00 |
| 23 | -3.75454E-01 | 1.45409E+00 |
| 24 | -3.74935E-01 | 1.45396E+00 |
| 25 | -3.74434E-01 | 1.45376E+00 |
| 26 | -3.73956E-01 | 1.45352E+00 |
| 27 | -3.73508E-01 | 1.45322E+00 |
| 28 | -3.73092E-01 | 1.45287E+00 |
| 29 | -3.72715E-01 | 1.45247E+00 |
| 30 | -3.72380E-01 | 1.45203E+00 |
| 31 | -3.72091E-01 | 1.45155E+00 |

SECTION NUMBER  2   'Z' =  6.7500
*********************************************

SECTION PROPERTIES

SECTION AREA                         =  3.4975E-01

LOCATION OF CENTROID
RELATIVE TO STACK AXIS    XBAR  =  4.2160E-02
                          YBAR  = -8.5134E-03

SECOND MOMENTS OF AREA     IX  =  9.7028E-02
ABOUT CENTROID             IY  =  8.2750E-02
                           IXY = -8.5788E-02

PRINCIPAL SECOND MOMENTS   IPX =  1.7597E-01  (AT  42.62 DEGREES TO 'X' AXIS)
OF AREA ABOUT CENTROID     IPY =  3.3040E-03  (AT  42.62 DEGREES TO 'Y' AXIS)

TORSIONAL CONSTANT                   =  2.3095E-03

SECTION COORDINATES

| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 1 | -9.71814E-01 | 1.47847E+00 | -9.80893E-01 | 1.47295E+00 |
| 2 | -9.64210E-01 | 1.43131E+00 | -9.57537E-01 | 1.42320E+00 |
| 3 | -9.16508E-01 | 1.34421E+00 | -9.34154E-01 | 1.37349E+00 |
| 4 | -9.88896E-01 | 1.33721E+00 | -9.10740E-01 | 1.32384E+00 |
| 5 | -9.61203E-01 | 1.29034E+00 | -8.87291E-01 | 1.27431E+00 |
| 6 | -9.33496E-01 | 1.24363E+00 | -8.63802E-01 | 1.24491E+00 |
| 7 | -9.05785E-01 | 1.19712E+00 | -8.40274E-01 | 1.17569E+00 |
| 8 | -7.75031E-01 | 1.15084E+00 | -8.16702E-01 | 1.12668E+00 |
| 9 | -7.50335E-01 | 1.10483E+00 | -7.93086E-01 | 1.07792E+00 |
| 10 | -7.22740E-01 | 1.05911E+00 | -7.69429E-01 | 1.02943E+00 |

| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 11 | -5.95129E-01 | 1.01371E+00 | -7.45726E-01 | 9.81243E-01 |
| 12 | -5.67578E-01 | 9.66655E-01 | -7.21981E-01 | 9.33385E-01 |
| 13 | -5.49101E-01 | 9.23986E-01 | -6.98196E-01 | 8.85834E-01 |
| 14 | -6.12714E-01 | 8.79714E-01 | -6.74376E-01 | 8.34768E-01 |
| 15 | -5.85433E-01 | 9.35882E-01 | -6.50530E-01 | 7.92103E-01 |
| 16 | -5.54273E-01 | 7.92502E-01 | -6.26656E-01 | 7.45861E-01 |
| 17 | -5.31236E-01 | 7.49596E-01 | -6.02761E-01 | 7.00085E-01 |
| 18 | -5.04327E-01 | 7.07199E-01 | -5.78850E-01 | 6.54800E-01 |
| 19 | -4.77534E-01 | 6.65321E-01 | -5.54925E-01 | 6.10029E-01 |
| 20 | -4.50050E-01 | 6.23990E-01 | -5.30986E-01 | 5.65790E-01 |
| 21 | -4.24305E-01 | 5.83207E-01 | -5.07321E-01 | 5.22113E-01 |
| 22 | -3.97971E-01 | 5.43016E-01 | -4.83047E-01 | 4.79012E-01 |
| 23 | -3.71542E-01 | 5.04220E-01 | -4.59042E-01 | 4.36503E-01 |
| 24 | -3.45317E-01 | 4.64447E-01 | -4.34998E-01 | 3.94605E-01 |
| 25 | -3.19131E-01 | 4.25113E-01 | -4.10912E-01 | 3.53335E-01 |
| 26 | -2.93169E-01 | 3.83429E-01 | -3.85776E-01 | 3.12715E-01 |
| 27 | -2.67215E-01 | 3.51411E-01 | -3.62584E-01 | 2.72762E-01 |
| 28 | -2.41373E-01 | 3.15089E-01 | -3.38332E-01 | 2.33485E-01 |
| 29 | -2.15209E-01 | 2.73463E-01 | -3.14008E-01 | 1.94900E-01 |
| 30 | -1.89053E-01 | 2.44548E-01 | -2.89615E-01 | 1.57020E-01 |
| 31 | -1.64204E-01 | 2.10365E-01 | -2.65137E-01 | 1.19869E-01 |
| 32 | -1.38672E-01 | 1.75924E-01 | -2.40568E-01 | 8.34506E-02 |
| 33 | -1.13115E-01 | 1.44232E-01 | -2.15900E-01 | 4.77784E-02 |
| 34 | -8.74918E-02 | 1.12302E-01 | -1.91125E-01 | 1.28629E-02 |
| 35 | -6.23545E-02 | 8.11542E-02 | -1.66235E-01 | -2.12804E-02 |
| 36 | -3.71447E-02 | 5.07579E-02 | -1.41239E-01 | -5.46383E-02 |
| 37 | -1.20155E-02 | 2.12163E-02 | -1.16130E-01 | -8.72073E-02 |
| 38 | 1.29449E-02 | -7.54477E-03 | -9.09245E-02 | -1.18973E-01 |
| 39 | 3.77933E-02 | -3.55034E-02 | -6.56277E-02 | -1.49937E-01 |
| 40 | 6.24321E-02 | -5.26489E-02 | -4.02476E-02 | -1.80075E-01 |
| 41 | 1.11372E-02 | -8.09739E-02 | -1.47979E-02 | -2.09386E-01 |
| 42 | 1.35543E-01 | -1.14473E-01 | 1.07094E-02 | -2.37854E-01 |
| 43 | 1.59513E-01 | -1.31135E-01 | 3.62613E-02 | -2.65490E-01 |
| 44 | 1.83272E-01 | -1.62959E-01 | 5.15434E-02 | -2.92279E-01 |
| 45 | 2.06776E-01 | -1.83942E-01 | 8.74399E-02 | -3.18215E-01 |
| 46 | 2.30028E-01 | -2.04042E-01 | 1.13033E-01 | -3.43293E-01 |
| 47 | 2.53025E-01 | -2.23375E-01 | 1.38604E-01 | -3.67495E-01 |
| 48 | 2.75777E-01 | -2.43812E-01 | 1.64132E-01 | -3.90825E-01 |
| 49 | 2.90231E-01 | -2.63340E-01 | 1.89592E-01 | -4.13279E-01 |
| 50 | 3.20578E-01 | -2.85130E-01 | 2.14961E-01 | -4.34837E-01 |
| 51 | 3.42647E-01 | -3.05022E-01 | 2.40218E-01 | -4.52491E-01 |
| 52 | 3.64507E-01 | -3.23079E-01 | 2.65355E-01 | -4.75229E-01 |
| 53 | 3.86148E-01 | -3.43066E-01 | 2.90370E-01 | -4.94031E-01 |
| 54 | 4.07709E-01 | -3.63020E-01 | 3.15277E-01 | -5.11879E-01 |
| 55 | 4.29039E-01 | -3.83128E-01 | 3.40192E-01 | -5.23752E-01 |
| 56 | 4.50351E-01 | -3.90152E-01 | 3.64926E-01 | -5.44666E-01 |
| 57 | 4.71521E-01 | -4.04002E-01 | 3.89493E-01 | -5.59561E-01 |
| 58 | 4.92628E-01 | -4.13807E-01 | 4.14105E-01 | -5.73446E-01 |
| 59 | 5.13750E-01 | -4.40623E-01 | 4.38681E-01 | -5.86300E-01 |
| 60 | 5.34900E-01 | -4.49302E-01 | 4.63241E-01 | -5.98098E-01 |
| 61 | 5.56102E-01 | -4.53474E-01 | 4.87806E-01 | -6.08835E-01 |
| 62 | 5.77415E-01 | -4.63562E-01 | 5.12404E-01 | -6.18491E-01 |
| 63 | 5.98337E-01 | -4.73562E-01 | 5.37068E-01 | -5.27044E-01 |
| 64 | 6.20574E-01 | -4.80120E-01 | 5.61834E-01 | -6.34485E-01 |
| 65 | 6.42528E-01 | -4.85053E-01 | 5.56745E-01 | -6.40802E-01 |
| 66 | 6.64737E-01 | | 6.11347E-01 | -6.45972E-01 |
| 67 | | | 6.37187E-01 | -6.49993E-01 |

| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 68 | 6.87486E-01 | -4.91388E-01 | 6.62802E-01 | -6.52857E-01 |
| 69 | 7.10642E-01 | -4.95159E-01 | 6.88725E-01 | -6.54556E-01 |
| 70 | 7.34134E-01 | -5.00407E-01 | 7.14988E-01 | -5.55090E-01 |
| 71 | 7.58259E-01 | -5.03178E-01 | 7.41625E-01 | -6.54492E-01 |
| 72 | 7.82856E-01 | -5.07528E-01 | 7.68672E-01 | -6.52752E-01 |
| 73 | 8.04170E-01 | -5.10520E-01 | 7.96160E-01 | -5.49911E-01 |
| 74 | 8.34036E-01 | -5.13229E-01 | 8.24121E-01 | -5.46010E-01 |
| 75 | 8.60577E-01 | -5.15740E-01 | 8.52580E-01 | -5.41104E-01 |
| 76 | 8.87453E-01 | -5.13148E-01 | 8.81557E-01 | -6.35250E-01 |
| 77 | 9.15877E-01 | -5.20563E-01 | 9.11065E-01 | -6.25573E-01 |
| 78 | 9.44621E-01 | -5.23104E-01 | 9.41103E-01 | -5.21147E-01 |
| 79 | 9.74050E-01 | -5.25890E-01 | 9.71663E-01 | -6.13106E-01 |
| 80 | 1.00422E+00 | -5.23091E-01 | 1.00272E+00 | -6.04576E-01 |

| POINT NO | XSEMI | YSEMI |
|---|---|---|
| 1 | -9.80693E-01 | 1.47295E+00 |
| 2 | -9.81126E-01 | 1.47346E+00 |
| 3 | -9.81306E-01 | 1.47399E+00 |
| 4 | -9.81632E-01 | 1.47454E+00 |
| 5 | -9.81502E-01 | 1.47510E+00 |
| 6 | -9.81516E-01 | 1.47567E+00 |
| 7 | -9.81473E-01 | 1.47624E+00 |
| 8 | -9.81375E-01 | 1.47680E+00 |
| 9 | -9.81221E-01 | 1.47735E+00 |
| 10 | -9.81014E-01 | 1.47788E+00 |
| 11 | -9.80756E-01 | 1.47839E+00 |
| 12 | -9.80449E-01 | 1.47867E+00 |
| 13 | -9.80098E-01 | 1.47932E+00 |
| 14 | -9.79706E-01 | 1.47972E+00 |
| 15 | -9.79277E-01 | 1.48009E+00 |
| 16 | -9.78816E-01 | 1.48040E+00 |
| 17 | -9.74328E-01 | 1.48066E+00 |
| 18 | -9.77318E-01 | 1.48087E+00 |
| 19 | -9.77293E-01 | 1.48102E+00 |
| 20 | -9.76757E-01 | 1.48112E+00 |
| 21 | -9.76217E-01 | 1.48115E+00 |
| 22 | -9.75678E-01 | 1.48112E+00 |
| 23 | -9.75146E-01 | 1.48104E+00 |
| 24 | -9.74628E-01 | 1.48090E+00 |
| 25 | -9.74129E-01 | 1.48070E+00 |
| 26 | -9.73654E-01 | 1.48044E+00 |
| 27 | -9.73209E-01 | 1.48014E+00 |
| 28 | -9.72798E-01 | 1.47978E+00 |
| 29 | -9.72426E-01 | 1.47938E+00 |
| 30 | -9.72097E-01 | 1.47894E+00 |
| 31 | -9.71814E-01 | 1.47847E+00 |

SECTION NUMBER 3   'Z' =   7.0000
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SECTION PROPERTIES

SECTION AREA                              =  3.3496E-01

LOCATION OF CENTROID              XBAR  =  3.1513E-02
RELATIVE TO STACK AXIS            YBAR  = -1.2689E-02

SECOND MOMENTS OF AREA            IX    =  1.0034E-01
ABOUT CENTROID                    IY    =  7.8515E-02
                                  IXY   = -8.5617E-02

PRINCIPAL SECOND MOMENTS          IPX   =  1.7537E-01  (AT   41.42 DEGREES TO 'X' AXIS)
OF AREA ABOUT CENTROID            IPY   =  3.2865E-03  (AT   41.42 DEGREES TO 'Y' AXIS)

TORSIONAL CONSTANT                        =  1.3336E-03

SECTION COORDINATES

| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 1 | -3.71302E-01 | 1.50428E+00 | -3.81050E-01 | 1.49903E+00 |
| 2 | -3.44506E-01 | 1.46637E+00 | -9.57775E-01 | 1.46874E+00 |
| 3 | -3.17035E-02 | 1.40850E+00 | -1.34483E-01 | 1.39849E+00 |
| 4 | -3.89648E-01 | 1.35072E+00 | -9.11171E-01 | 1.34829E+00 |
| 5 | -3.62203E-01 | 1.31306E+00 | -8.57936E-01 | 1.29819E+00 |
| 6 | -3.34756E-01 | 1.26555E+00 | -8.64471E-01 | 1.24823E+00 |
| 7 | -8.07318E-01 | 1.21822E+00 | -8.41079E-01 | 1.19643E+00 |
| 8 | -7.79336E-01 | 1.17111E+00 | -8.17656E-01 | 1.14883E+00 |
| 9 | -7.52500E-01 | 1.12425E+00 | -7.94200E-01 | 1.09947E+00 |
| 10 | -7.25142E-01 | 1.07758E+00 | -7.70710E-01 | 1.05037E+00 |
| 11 | -6.97831E-01 | 1.03141E+00 | -7.47186E-01 | 1.00156E+00 |
| 12 | -6.70578E-01 | 9.85486E-01 | -7.23627E-01 | 9.53033E-01 |
| 13 | -6.43336E-01 | 9.39934E-01 | -7.00033E-01 | 9.04966E-01 |
| 14 | -6.16230E-01 | 8.94776E-01 | -6.76413E-01 | 8.57227E-01 |
| 15 | -5.89239E-01 | 8.51048E-01 | -6.52764E-01 | 8.09904E-01 |
| 16 | -5.62387E-01 | 8.07685E-01 | -6.29086E-01 | 7.63017E-01 |
| 17 | -5.35514E-01 | 7.61957E-01 | -6.05382E-01 | 7.16592E-01 |
| 18 | -5.04310E-01 | 7.15645E-01 | -5.81656E-01 | 5.70653E-01 |
| 19 | -4.82334E-01 | 6.75855E-01 | -5.57907E-01 | 6.25221E-01 |
| 20 | -4.55351E-01 | 6.33596E-01 | -5.34135E-01 | 5.80319E-01 |
| 21 | -4.29491E-01 | 5.91900E-01 | -5.10338E-01 | 5.35974E-01 |
| 22 | -4.03219E-01 | 5.50782E-01 | -4.86514E-01 | 4.92200E-01 |
| 23 | -3.77044E-01 | 5.10266E-01 | -4.62649E-01 | 4.49014E-01 |
| 24 | -3.50951E-01 | 4.70346E-01 | -4.38741E-01 | 4.06435E-01 |
| 25 | -3.24367E-01 | 4.31071E-01 | -4.14783E-01 | 3.64481E-01 |
| 26 | -2.99058E-01 | 3.92439E-01 | -3.90771E-01 | 3.23173E-01 |
| 27 | -2.73229E-01 | 3.54660E-01 | -3.66699E-01 | 2.82525E-01 |
| 28 | -2.47476E-01 | 3.17184E-01 | -3.42563E-01 | 2.42549E-01 |
| 29 | -2.21793E-01 | 2.80588E-01 | -3.18356E-01 | 2.03259E-01 |
| 30 | -1.96175E-01 | 2.44696E-01 | -2.94075E-01 | 1.54670E-01 |
| 31 | -1.70618E-01 | 2.03526E-01 | -2.69709E-01 | 1.26602E-01 |
| 32 | -1.45122E-01 | 1.75009E-01 | -2.45254E-01 | 8.96610E-02 |
| 33 | -1.19691E-01 | 1.41392E-01 | -2.20702E-01 | 5.32552E-02 |
| 34 | -9.43310E-02 | 1.03446E-01 | -1.96046E-01 | 1.76047E-02 |
| 35 | -6.90514E-02 | 7.62565E-02 | -1.71283E-01 | -1.72849E-02 |

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| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 36 | -4.38552E-02 | 4.43625E-02 | -1.46408E-01 | -5.13993E-02 |
| 37 | -1.87523E-02 | 1.42363E-02 | -1.21426E-01 | -8.47342E-02 |
| 38 | 6.24930E-03 | -1.55993E-02 | -9.63409E-02 | -1.17281E-01 |
| 39 | 3.11418E-02 | -4.46424E-02 | -7.11589E-02 | -1.43027E-01 |
| 40 | 5.59158E-02 | -7.23856E-02 | -4.58860E-02 | -1.79965E-01 |
| 41 | 3.05659E-02 | -1.00325E-01 | -2.05312E-02 | -2.10089E-01 |
| 42 | 1.05050E-01 | -1.26954E-01 | 4.89729E-03 | -2.39392E-01 |
| 43 | 1.29450E-01 | -1.52760E-01 | 3.03900E-02 | -2.67871E-01 |
| 44 | 1.53666E-01 | -1.77761E-01 | 5.59367E-02 | -2.95519E-01 |
| 45 | 1.77719E-01 | -2.01936E-01 | 8.15257E-02 | -3.22332E-01 |
| 46 | 2.01542E-01 | -2.25269E-01 | 1.07144E-01 | -3.48302E-01 |
| 47 | 2.25254E-01 | -2.47820E-01 | 1.32778E-01 | -3.73419E-01 |
| 48 | 2.48733E-01 | -2.69521E-01 | 1.58412E-01 | -3.97686E-01 |
| 49 | 2.72023E-01 | -2.90398E-01 | 1.84028E-01 | -4.21099E-01 |
| 50 | 2.95131E-01 | -3.10454E-01 | 2.09609E-01 | -4.43645E-01 |
| 51 | 3.18061E-01 | -3.29700E-01 | 2.35141E-01 | -4.65313E-01 |
| 52 | 3.40821E-01 | -3.48144E-01 | 2.60617E-01 | -4.86095E-01 |
| 53 | 3.63417E-01 | -3.65793E-01 | 2.86035E-01 | -5.05978E-01 |
| 54 | 3.85871E-01 | -3.82661E-01 | 3.11404E-01 | -5.24945E-01 |
| 55 | 4.08195E-01 | -3.98759E-01 | 3.36734E-01 | -5.42991E-01 |
| 56 | 4.30406E-01 | -4.14100E-01 | 3.62031E-01 | -5.60105E-01 |
| 57 | 4.52520E-01 | -4.28697E-01 | 3.87303E-01 | -5.76265E-01 |
| 58 | 4.74558E-01 | -4.42563E-01 | 4.12559E-01 | -5.91471E-01 |
| 59 | 4.96542E-01 | -4.55708E-01 | 4.37810E-01 | -6.05710E-01 |
| 60 | 5.18527E-01 | -4.61151E-02 | 4.63068E-01 | -6.18954E-01 |
| 61 | 5.40531E-01 | -4.79906E-01 | 4.88348E-01 | -6.31229E-01 |
| 62 | 5.62573E-01 | -4.90990E-01 | 5.13668E-01 | -6.42496E-01 |
| 63 | 5.84634E-01 | -5.01419E-01 | 5.39049E-01 | -6.52749E-01 |
| 64 | 6.06934E-01 | -5.11212E-01 | 5.64516E-01 | -6.61985E-01 |
| 65 | 6.29334E-01 | -5.20388E-01 | 5.90099E-01 | -6.70197E-01 |
| 66 | 6.51933E-01 | -5.28970E-01 | 6.15829E-01 | -6.77375E-01 |
| 67 | 6.74762E-01 | -5.36984E-01 | 6.41737E-01 | -6.83518E-01 |
| 68 | 6.97910E-01 | -5.44454E-01 | 6.67848E-01 | -6.88628E-01 |
| 69 | 7.21398E-01 | -5.51412E-01 | 6.94160E-01 | -6.92700E-01 |
| 70 | 7.45190E-01 | -5.57896E-01 | 7.20757E-01 | -6.95747E-01 |
| 71 | 7.69365E-01 | -5.63943E-01 | 7.47600E-01 | -6.97779E-01 |
| 72 | 7.93958E-01 | -5.63603E-01 | 7.74731E-01 | -6.98813E-01 |
| 73 | 8.19005E-01 | -5.74929E-01 | 8.02174E-01 | -6.98877E-01 |
| 74 | 8.44538E-01 | -5.79982E-01 | 8.29949E-01 | -6.98006E-01 |
| 75 | 8.70542E-01 | -5.84831E-01 | 8.58075E-01 | -6.96248E-01 |
| 76 | 8.97159E-01 | -5.89553E-01 | 8.86567E-01 | -6.93654E-01 |
| 77 | 9.24279E-01 | -5.94236E-01 | 9.15433E-01 | -6.90302E-01 |
| 78 | 9.51942E-01 | -5.99974E-01 | 9.44675E-01 | -6.86273E-01 |
| 79 | 9.80138E-01 | -6.03869E-01 | 9.74289E-01 | -6.81664E-01 |
| 80 | 1.00854E+00 | -6.03015E-01 | 1.00426E+00 | -6.76569E-01 |

| POINT NO | XSEMI | YSEMI |
|---|---|---|
| 1 | -9.81050E-01 | 1.49903E+00 |
| 2 | -9.81276E-01 | 1.49954E+00 |
| 3 | -9.81449E-01 | 1.50006E+00 |
| 4 | -9.81568E-01 | 1.50060E+00 |
| 5 | -9.81632E-01 | 1.50116E+00 |
| 6 | -9.81638E-01 | 1.50172E+00 |
| 7 | -9.81588E-01 | 1.50227E+00 |
| 8 | -9.81433E-01 | 1.50283E+00 |
| 9 | -9.81322E-01 | 1.50336E+00 |

| POINT NO | XSEMI | YSEMI |
|---|---|---|
| 10 | -9.81108E-01 | 1.50389E+00 |
| 11 | -9.80543E-01 | 1.50438E+00 |
| 12 | -9.80531E-01 | 1.50485E+00 |
| 13 | -9.80174E-01 | 1.50528E+00 |
| 14 | -9.79777E-01 | 1.50567E+00 |
| 15 | -9.79343E-01 | 1.50602E+00 |
| 16 | -9.78878E-01 | 1.50632E+00 |
| 17 | -9.78387E-01 | 1.50657E+00 |
| 18 | -9.77875E-01 | 1.50676E+00 |
| 19 | -9.77347E-01 | 1.50690E+00 |
| 20 | -9.76810E-01 | 1.50698E+00 |
| 21 | -9.76270E-01 | 1.50701E+00 |
| 22 | -9.75731E-01 | 1.50597E+00 |
| 23 | -9.75201E-01 | 1.50685E+00 |
| 24 | -9.74694E-01 | 1.50673E+00 |
| 25 | -9.74186E-01 | 1.50652E+00 |
| 26 | -9.73716E-01 | 1.50626E+00 |
| 27 | -9.73275E-01 | 1.50595E+00 |
| 28 | -9.72868E-01 | 1.50559E+00 |
| 29 | -9.72501E-01 | 1.50519E+00 |
| 30 | -9.72178E-01 | 1.50476E+00 |
| 31 | -9.71902E-01 | 1.50428E+00 |

SECTION NUMBER 4   'Z' = 7.2500
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**SECTION PROPERTIES**

|  |  |  |
|---|---|---|
| SECTION AREA | = | 3.2041E-01 |
| LOCATION OF CENTROID RELATIVE TO STACK AXIS | XBAR = YBAP = | 2.1059E-02 -1.5674E-02 |
| SECOND MOMENTS OF AREA ABOUT CENTROID | IX = IY = IXY = | 1.0331E-01 7.4955E-02 -8.5101E-02 |
| PRINCIPAL SECOND MOMENTS OF AREA ABOUT CENTROID | IPX = IPY = | 1.7541E-01 (AT 40.27 DEGREES TO 'X' AXIS) 2.3637E-03 (AT 40.27 DEGREES TO 'Y' AXIS) |
| TORSIONAL CONSTANT | = | 1.5122E-03 |

**SECTION COORDINATES**

| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 1 | -3.71649E-01 | 1.53031E+00 | -9.81049E-01 | 1.52531E+00 |
| 2 | -3.44597E-01 | 1.48144E+00 | -9.57789E-01 | 1.47426E+00 |
| 3 | -3.17336E-01 | 1.43266E+00 | -9.34524E-01 | 1.42326E+00 |
| 4 | -8.90072E-01 | 1.38400E+00 | -9.11251E-01 | 1.37239E+00 |
| 5 | -3.62815E-01 | 1.33546E+00 | -8.87957E-01 | 1.32154E+00 |
| 6 | -3.35571E-01 | 1.25713E+00 | -8.64669E-01 | 1.27104E+00 |
| 7 | -8.08349E-01 | 1.23899E+00 | -8.41354E-01 | 1.22063E+00 |
| 8 | -7.81157E-01 | 1.19108E+00 | -8.18030E-01 | 1.17043E+00 |
| 9 | -7.54004E-01 | 1.14342E+00 | -7.94683E-01 | 1.12049E+00 |
| 10 | -7.26838E-01 | 1.09606E+00 | -7.71316E-01 | 1.07081E+00 |
| 11 | -6.99349E-01 | 1.04900E+00 | -7.47925E-01 | 1.02144E+00 |

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| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 12 | -6.72855E-01 | 1.00228E+00 | -7.24514E-01 | 3.72392E-01 |
| 13 | -5.45955E-01 | 9.55920E-01 | -7.01079E-01 | 3.23700E-01 |
| 14 | -6.19130E-01 | 9.09948E-01 | -5.77625E-01 | 3.75386E-01 |
| 15 | -5.92397E-01 | 8.64393E-01 | -6.54149E-01 | 2.74483E-01 |
| 16 | -5.65756E-01 | 8.19273E-01 | -6.30651E-01 | 7.80008E-01 |
| 17 | -5.39239E-01 | 7.74609E-01 | -6.07132E-01 | 7.32987E-01 |
| 18 | -5.12814E-01 | 7.30429E-01 | -5.83593E-01 | 6.86443E-01 |
| 19 | -4.86486E-01 | 6.86751E-01 | -5.60034E-01 | 5.40397E-01 |
| 20 | -4.60258E-01 | 6.43591E-01 | -5.36453E-01 | 5.94871E-01 |
| 21 | -4.34120E-01 | 6.00977E-01 | -5.12851E-01 | 5.49890E-01 |
| 22 | -4.08070E-01 | 5.58928E-01 | -4.89215E-01 | 5.05469E-01 |
| 23 | -3.82133E-01 | 5.17460E-01 | -4.65538E-01 | 4.61626E-01 |
| 24 | -3.56216E-01 | 4.76593E-01 | -4.41914E-01 | 4.16381E-01 |
| 25 | -3.30403E-01 | 4.36353E-01 | -4.18038E-01 | 3.75750E-01 |
| 26 | -3.04661E-01 | 3.96748E-01 | -3.94203E-01 | 3.33756E-01 |
| 27 | -2.78930E-01 | 3.57795E-01 | -3.70304E-01 | 2.92413E-01 |
| 28 | -2.53376E-01 | 3.19513E-02 | -3.46336E-01 | 2.51735E-01 |
| 29 | -2.27525E-01 | 2.81926E-01 | -3.22293E-01 | 2.11735E-01 |
| 30 | -2.02330E-01 | 2.45029E-01 | -2.98167E-01 | 1.72430E-01 |
| 31 | -1.76838E-01 | 2.08845E-01 | -2.73955E-01 | 1.33837E-01 |
| 32 | -1.51428E-01 | 1.73387E-01 | -2.49650E-01 | 9.59644E-02 |
| 33 | -1.25151E-01 | 1.38662E-01 | -2.25247E-01 | 5.68221E-02 |
| 34 | -1.00831E-01 | 1.04679E-01 | -2.00742E-01 | 2.24215E-02 |
| 35 | -7.56619E-02 | 7.14533E-02 | -1.76129E-01 | -1.3223?E-02 |
| 36 | -5.05045E-02 | 3.69910E-02 | -1.51406E-01 | -4.510?4E-02 |
| 37 | -2.54248E-02 | 2.23608E-02 | -1.26573E-01 | -8.22113E-02 |
| 38 | -4.15014E-04 | -2.36252E-02 | -1.01631E-01 | -1.15542E-01 |
| 39 | 2.45155E-02 | -5.37621E-02 | -7.65858E-02 | -1.48083E-01 |
| 40 | 4.93649E-02 | -8.31103E-02 | -5.14403E-02 | -1.79826E-01 |
| 41 | 7.41251E-02 | -1.11669E-01 | -2.619?7E-02 | -2.10771E-01 |
| 42 | 9.87914E-02 | -1.39433E-01 | -6.55925E-04 | -2.40913E-01 |
| 43 | 1.23358E-01 | -1.66399E-01 | 2.45538E-02 | -2.72240E-01 |
| 44 | 1.47818E-01 | -1.92564E-01 | 5.00533E-02 | -2.98750E-01 |
| 45 | 1.72165E-01 | -2.17930E-01 | 7.56257E-02 | -3.26440E-01 |
| 46 | 1.96387E-01 | -2.42497E-01 | 1.01263E-01 | -3.53309E-01 |
| 47 | 2.20430E-01 | -2.66254E-01 | 1.26956E-01 | -3.79342E-01 |
| 48 | 2.44440E-01 | -2.89230E-01 | 1.52693E-01 | -4.04547E-01 |
| 49 | 2.68270E-01 | -3.11399E-01 | 1.78464E-01 | -4.28921E-01 |
| 50 | 2.91971E-01 | -3.32778E-01 | 2.04250E-01 | -4.52453E-01 |
| 51 | 3.15544E-01 | -3.53378E-01 | 2.30064E-01 | -4.75134E-01 |
| 52 | 3.38934E-01 | -3.73209E-01 | 2.55879E-01 | -4.96961E-01 |
| 53 | 3.62330E-01 | -3.92286E-01 | 2.81700E-01 | -5.17925E-01 |
| 54 | 3.85533E-01 | -4.10605E-01 | 3.07531E-01 | -5.38011E-01 |
| 55 | 4.06642E-01 | -4.28198E-01 | 3.33376E-01 | -5.57220E-01 |
| 56 | 4.31723E-01 | -4.45072E-01 | 3.59236E-01 | -5.75544E-01 |
| 57 | 4.54519E-01 | -4.61243E-01 | 3.85114E-01 | -5.92970E-01 |
| 58 | 4.77594E-01 | -4.76724E-01 | 4.11013E-01 | -6.09497E-01 |
| 59 | 5.00455E-01 | -4.91529E-01 | 4.35938E-01 | -6.25120E-01 |
| 60 | 5.23304E-01 | -5.05675E-01 | 4.62895E-01 | -6.39829E-01 |
| 61 | 5.46133E-01 | -5.191.8E-01 | 4.88889E-01 | -6.53623E-0? |
| 62 | 5.69043E-01 | -5.32077E-01 | 5.14951E-01 | -6.55501E-01 |
| 63 | 5.91374E-01 | -5.44364E-01 | 5.41029E-01 | -6.78454E-01 |
| 64 | 6.14395E-01 | -5.56070E-01 | 5.67198E-01 | -6.89484E-01 |
| 65 | 6.38034E-01 | -5.67214E-01 | 5.93453E-01 | -6.99593E-01 |
| 66 | 6.61338E-01 | -5.77831E-01 | 6.19310E-01 | -7.08778E-01 |
| 67 | 5.84736E-01 | -5.87914E-01 | 6.46287E-01 | -7.17044E-01 |
| 68 | 7.08333E-01 | -5.97520E-01 | 6.72893E-01 | -7.24398E-01 |

| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 69 | 7.32135E-01 | -6.05666E-01 | 6.99636E-01 | -7.30844E-01 |
| 70 | 7.56130E-01 | -6.13384E-01 | 7.26526E-01 | -7.36396E-01 |
| 71 | 7.80470E-01 | -6.23709E-01 | 7.53574E-01 | -7.41067E-01 |
| 72 | 8.05030E-01 | -6.31679E-01 | 7.80791E-01 | -7.44874E-01 |
| 73 | 8.29390E-01 | -6.39339E-01 | 8.08185E-01 | -7.47843E-01 |
| 74 | 8.55070E-01 | -6.447.5E-01 | 8.35778E-01 | -7.50003E-01 |
| 75 | 8.80547E-01 | -6.53923E-01 | 8.63671E-01 | -7.51391E-01 |
| 76 | 9.06455E-01 | -6.63959E-01 | 8.91576E-01 | -7.52048E-01 |
| 77 | 9.32640E-01 | -6.67909E-01 | 9.19801E-01 | -7.52031E-01 |
| 78 | 9.53253E-01 | -6.74845E-01 | 9.48247E-01 | -7.51399E-01 |
| 79 | 9.65136E-01 | -6.81840E-01 | 3.76914E-01 | -7.50222E-01 |
| 80 | 1.01346E+00 | -6.81950E-01 | 1.00500E+00 | -7.48561E-01 |

| POINT NO | XSEMI | YSEMI |
|---|---|---|
| 1 | -9.81049E-01 | 1.52531E+00 |
| 2 | -9.81270E-01 | 1.52581E+00 |
| 3 | -9.31438E-01 | 1.52633E+00 |
| 4 | -9.81551E-01 | 1.52687E+00 |
| 5 | -9.81608E-01 | 1.52742E+00 |
| 6 | -9.81609E-01 | 1.52797E+00 |
| 7 | -9.81553E-01 | 1.52852E+00 |
| 8 | -9.81442E-01 | 1.52907E+00 |
| 9 | -9.81275E-01 | 1.52960E+00 |
| 10 | -9.81056E-01 | 1.53011E+00 |
| 11 | -9.80786E-01 | 1.53059E+00 |
| 12 | -9.80459E-01 | 1.53105E+00 |
| 13 | -9.80108E-01 | 1.53147E+00 |
| 14 | -9.79707E-01 | 1.53185E+00 |
| 15 | -9.73270E-01 | 1.53218E+00 |
| 16 | -9.78302E-01 | 1.53247E+00 |
| 17 | -9.76308E-01 | 1.53270E+00 |
| 18 | -9.77794E-01 | 1.53289E+00 |
| 19 | -9.77255E-01 | 1.53301E+00 |
| 20 | -9.76727E-01 | 1.53308E+00 |
| 21 | -9.75136E-01 | 1.53310E+00 |
| 22 | -9.75649E-01 | 1.53305E+00 |
| 23 | -9.75119E-01 | 1.53295E+00 |
| 24 | -9.74605E-01 | 1.53279E+00 |
| 25 | -9.74110E-01 | 1.53257E+00 |
| 26 | -9.73o4tE-01 | 1.53231E+00 |
| 27 | -9.73203E-01 | 1.53199E+00 |
| 28 | -9.72801E-01 | 1.53163E+00 |
| 29 | -9.72438E-01 | 1.53123E+00 |
| 30 | -9.72120E-01 | 1.53079E+00 |
| 31 | -9.71849E-01 | 1.53031E+00 |

SECTION NUMBER  5    'Z' = 7.5000
•••••••••••••••••••••••••••••

SECTION PROPERTIES

SECTION AREA                    = 3.0633E-01

LOCATION OF CENTROID     XBAR = 1.0762E-02
RELATIVE TO STACK AXIS   YBAR = -1.4558E-02

SECOND MOMENTS OF AREA   IX  = 1.0645E-01
ABOUT CENTROID           IY  = 7.1746E-02
                         IXY = -6.4458E-02

PRINCIPAL SECOND MOMENTS  IPX = 1.7522E-01  (AT 39.12 DEGREES TO 'X' AXIS)
OF AREA ABOUT CENTROID    IPY = 2.4772E-03  (AT 39.12 DEGREES TO 'Y' AXIS)

TORSIONAL CONSTANT              = 1.3376E-03

SECTION COORDINATES

| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 1  | -9.71834E-01 | 1.55127E+00 | -9.81086E-01 | 1.55648E+00 |
| 2  | -9.44679E-01 | 1.51100E+00 | -9.57803E-01 | 1.50421E+00 |
| 3  | -9.17518E-01 | 1.46808E+00 | -9.34517E-01 | 1.45206E+00 |
| 4  | -8.90357E-01 | 1.44097E+00 | -9.11223E-01 | 1.40006E+00 |
| 5  | -8.63206E-01 | 1.36115E+00 | -8.87920E-01 | 1.34823E+00 |
| 6  | -8.36076E-01 | 1.31160E+00 | -8.64605E-01 | 1.29662E+00 |
| 7  | -8.08957E-01 | 1.26230E+00 | -8.41277E-01 | 1.24523E+00 |
| 8  | -7.81676E-01 | 1.21327E+00 | -8.17935E-01 | 1.19411E+00 |
| 9  | -7.54534E-01 | 1.16454E+00 | -7.94577E-01 | 1.14327E+00 |
| 10 | -7.27839E-01 | 1.11613E+00 | -7.71201E-01 | 1.09275E+00 |
| 11 | -7.00900E-01 | 1.06807E+00 | -7.47806E-01 | 1.04256E+00 |
| 12 | -6.74026E-01 | 1.02038E+00 | -7.24391E-01 | 9.32727E-01 |
| 13 | -6.47226E-01 | 9.73079E-01 | -7.00957E-01 | 9.43281E-01 |
| 14 | -6.20507E-01 | 9.26191E-01 | -6.77508E-01 | 3.94243E-01 |
| 15 | -5.93879E-01 | 8.79742E-01 | -6.54040E-01 | 8.45637E-01 |
| 16 | -5.67351E-01 | 8.33750E-01 | -6.30555E-01 | 7.97483E-01 |
| 17 | -5.40926E-01 | 7.88231E-01 | -6.07052E-01 | 7.49802E-01 |
| 18 | -5.14603E-01 | 7.43208E-01 | -5.83535E-01 | 7.02614E-01 |
| 19 | -4.88330E-01 | 6.96697E-01 | -5.60002E-01 | 6.55938E-01 |
| 20 | -4.62254E-01 | 6.54712E-01 | -5.36452E-01 | 5.09794E-01 |
| 21 | -4.36224E-01 | 6.11272E-01 | -5.12886E-01 | 5.64202E-01 |
| 22 | -4.10294E-01 | 5.63396E-01 | -4.89292E-01 | 5.19175E-01 |
| 23 | -3.84432E-01 | 5.25095E-01 | -4.65665E-01 | 4.74729E-01 |
| 24 | -3.58664E-01 | 4.84365E-01 | -4.42000E-01 | 4.30880E-01 |
| 25 | -3.32975E-01 | 4.43284E-01 | -4.18291E-01 | 3.87643E-01 |
| 26 | -3.07361E-01 | 4.02812E-01 | -3.94533E-01 | 3.45039E-01 |
| 27 | -2.81817E-01 | 3.62971E-01 | -3.70720E-01 | 3.03076E-01 |
| 28 | -2.56340E-01 | 3.23784E-01 | -3.46847E-01 | 2.61769E-01 |
| 29 | -2.30323E-01 | 2.85263E-01 | -3.22908E-01 | 2.21129E-01 |
| 30 | -2.05563E-01 | 2.47417E-01 | -2.98896E-01 | 1.81172E-01 |
| 31 | -1.80255E-01 | 2.10260E-01 | -2.74805E-01 | 1.41914E-01 |
| 32 | -1.54936E-01 | 1.73809E-01 | -2.50630E-01 | 1.03360E-01 |
| 33 | -1.29783E-01 | 1.33069E-01 | -2.26365E-01 | 6.55220E-02 |
| 34 | -1.04623E-01 | 1.03048E-01 | -2.02005E-01 | 2.84108E-02 |
| 35 | -7.95130E-02 | 6.87577E-02 | -1.77545E-01 | -7.96017E-03 |

| POINT | XS | YS | XP | YP |
|---|---|---|---|---|
| 36 | -5.44692E-02 | 3.52080E-02 | -1.52992E-01 | -4.35836E-02 |
| 37 | -2.94733E-02 | 2.40396E-03 | -1.28313E-01 | -7.84531E-02 |
| 38 | -4.54877E-03 | -2.90477E-02 | -1.03541E-01 | -1.12561E-01 |
| 39 | 2.03193E-02 | -6.07393E-02 | -7.86691E-02 | -1.45900E-01 |
| 40 | 4.51239E-02 | -9.14645E-02 | -5.05997E-02 | -1.78461E-01 |
| 41 | 6.96534E-02 | -1.21222E-01 | -2.86351E-02 | -2.10243E-01 |
| 42 | 9.45357E-02 | -1.50210E-01 | -3.47790E-03 | -2.41235E-01 |
| 43 | 1.19142E-01 | -1.73423E-01 | 2.17693E-02 | -2.71440E-01 |
| 44 | 1.43690E-01 | -2.05854E-01 | 4.71034E-02 | -3.00846E-01 |
| 45 | 1.68148E-01 | -2.32518E-01 | 7.25213E-02 | -3.29455E-01 |
| 46 | 1.92544E-01 | -2.59401E-01 | 9.80195E-02 | -3.57264E-01 |
| 47 | 2.15363E-01 | -2.83510E-01 | 1.23594E-01 | -3.84266E-01 |
| 48 | 2.41122E-01 | -3.07343E-01 | 1.49241E-01 | -4.10465E-01 |
| 49 | 2.65307E-01 | -3.31403E-01 | 1.74956E-01 | -4.35857E-01 |
| 50 | 2.89424E-01 | -3.54202E-01 | 2.00739E-01 | -4.60436E-01 |
| 51 | 3.13476E-01 | -3.76244E-01 | 2.26589E-01 | -4.84195E-01 |
| 52 | 3.37456E-01 | -3.97553E-01 | 2.52506E-01 | -5.07131E-01 |
| 53 | 3.61399E-01 | -4.13128E-01 | 2.78494E-01 | -5.29239E-01 |
| 54 | 3.85291E-01 | -4.37986E-01 | 3.04555E-01 | -5.50508E-01 |
| 55 | 4.09114E-01 | -4.57143E-01 | 3.30694E-01 | -5.70940E-01 |
| 56 | 4.32307E-01 | -4.75615E-01 | 3.56912E-01 | -5.90531E-01 |
| 57 | 4.56655E-01 | -4.93418E-01 | 3.83211E-01 | -5.09275E-01 |
| 58 | 4.80397E-01 | -5.10569E-01 | 4.09592E-01 | -6.27173E-01 |
| 59 | 5.04113E-01 | -5.27082E-01 | 4.36056E-01 | -6.44225E-01 |
| 60 | 5.27320E-01 | -5.42941E-01 | 4.62601E-01 | -5.50431E-01 |
| 61 | 5.51540E-01 | -5.53284E-01 | 4.89228E-01 | -6.75792E-01 |
| 62 | 5.75279E-01 | -5.73012E-01 | 5.15935E-01 | -6.90313E-01 |
| 63 | 5.99045E-01 | -5.87147E-01 | 5.42722E-01 | -7.03997E-01 |
| 64 | 6.22850E-01 | -6.00830E-01 | 5.69586E-01 | -7.16848E-01 |
| 65 | 6.46797E-01 | -6.13955E-01 | 5.96526E-01 | -7.28876E-01 |
| 66 | 6.70626E-01 | -6.20615E-01 | 6.23539E-01 | -7.40089E-01 |
| 67 | 6.94518E-01 | -6.39804E-01 | 6.50621E-01 | -7.50496E-01 |
| 68 | 7.18534E-01 | -6.50556E-01 | 6.77652E-01 | -7.60111E-01 |
| 69 | 7.42871E-01 | -6.61901E-01 | 7.04956E-01 | -7.68945E-01 |
| 70 | 7.67158E-01 | -6.72462E-01 | 7.32196E-01 | -7.77013E-01 |
| 71 | 7.91562E-01 | -6.83460E-01 | 7.59481E-01 | -7.84332E-01 |
| 72 | 8.16097E-01 | -6.93752E-01 | 7.86808E-01 | -7.90924E-01 |
| 73 | 8.40773E-01 | -7.03747E-01 | 8.14179E-01 | -7.90800E-01 |
| 74 | 8.65602E-01 | -7.13488E-01 | 8.41596E-01 | -3.019355E-01 |
| 75 | 8.90572E-01 | -7.23014E-01 | 8.69063E-01 | -3.05532E-01 |
| 76 | 9.15711E-01 | -7.32364E-01 | 8.96585E-01 | -8.10442E-01 |
| 77 | 9.41032E-01 | -7.41582E-01 | 9.24169E-01 | -8.13766E-01 |
| 78 | 9.66534E-01 | -7.50715E-01 | 9.51819E-01 | -3.16526E-01 |
| 79 | 9.92254E-01 | -7.59310E-01 | 9.79540E-01 | -3.18780E-01 |
| 80 | 1.01808E+00 | -7.63884E-01 | 1.00734E+00 | -3.20554E-01 |

| POINT | XSEMI | YSEMI |
|---|---|---|
| 1 | -3.81056E-01 | 1.55648E+00 |
| 2 | -3.81301E-01 | 1.55699E+00 |
| 3 | -3.81463E-01 | 1.55751E+00 |
| 4 | -3.81571E-01 | 1.55805E+00 |
| 5 | -3.81622E-01 | 1.55860E+00 |
| 6 | -3.81617E-01 | 1.55915E+00 |
| 7 | -3.81556E-01 | 1.55969E+00 |
| 8 | -3.81438E-01 | 1.56023E+00 |
| 9 | -3.81266E-01 | 1.56076E+00 |

| POINT NO | XSEMI | YSEMI |
|---|---|---|
| 10 | -9.81042E-01 | 1.56126E+00 |
| 11 | -9.80767E-01 | 1.56174E+00 |
| 12 | -9.80445E-01 | 1.55218E+00 |
| 13 | -9.80079E-01 | 1.56259E+00 |
| 14 | -9.79674E-01 | 1.56296E+00 |
| 15 | -9.79234E-01 | 1.56329E+00 |
| 16 | -9.78763E-01 | 1.56356E+00 |
| 17 | -9.78266E-01 | 1.56379E+00 |
| 18 | -9.77751E-01 | 1.56396E+00 |
| 19 | -9.77220E-01 | 1.54407E+00 |
| 20 | -9.76682E-01 | 1.56413E+00 |
| 21 | -9.76141E-01 | 1.56413E+00 |
| 22 | -9.75604E-01 | 1.56407E+00 |
| 23 | -9.75076E-01 | 1.56396E-09 |
| 24 | -9.74563E-01 | 1.56379E+00 |
| 25 | -9.74071E-01 | 1.56356E+00 |
| 26 | -9.73605E-01 | 1.56329E+00 |
| 27 | -9.73171E-01 | 1.56297E+00 |
| 28 | -9.72772E-01 | 1.56260E+00 |
| 29 | -9.72414E-01 | 1.55219E+00 |
| 30 | -9.72100E-01 | 1.56174E+00 |
| 31 | -9.71834E-01 | 1.56127E+00 |

SECTION NUMBER  6    'Z' =   7.7500
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SECTION PROPERTIES

SECTION AREA                              =   2.9466E-01

LOCATION OF CENTROID          XBAR        =   9.3344E-05
RELATIVE TO STACK AXIS        YBAR        =  -6.49982E-03

SECOND MOMENTS OF AREA        IX          =   1.0988E-01
ABOUT CENTROID                IY          =   6.7992E-02
                              IXY         =  -8.4240E-02

PRINCIPAL SECOND MOMENTS      IPX         =   1.7574E-01  (AT   38.02 DEGREES TO 'X' AXIS)
OF AREA ABOUT CENTROID        IPY         =   2.1325E-03  (AT   38.02 DEGREES TO 'Y' AXIS)

TORSIONAL CONSTANT                        =   1.1360E-03

SECTION COORDINATES

| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 1 | -9.71812E-01 | 1.60157E+00 | -9.81124E-01 | 1.59697E+00 |
| 2 | -9.44719E-01 | 1.54940E+00 | -9.57816E-01 | 1.54292E+00 |
| 3 | -9.17623E-01 | 1.49742E+00 | -9.34504E-01 | 1.49905E+00 |
| 4 | -8.90530E-01 | 1.44566E+00 | -9.11183E-01 | 1.43539E+00 |
| 5 | -8.63445E-01 | 1.39415E+00 | -8.87851E-01 | 1.38198E+00 |
| 6 | -8.36375E-01 | 1.34290E+00 | -8.64505E-01 | 1.32882E+00 |
| 7 | -8.09327E-01 | 1.29196E+00 | -8.41143E-01 | 1.27599E+00 |
| 8 | -7.82307E-01 | 1.24134E+00 | -8.17763E-01 | 1.22340E+00 |
| 9 | -7.55321E-01 | 1.19106E+00 | -7.94363E-01 | 1.17118E+00 |
| 10 | -7.28378E-01 | 1.14115E+00 | -7.70940E-01 | 1.11932E+00 |
| 11 | -7.01484E-01 | 1.03162E+00 | -7.47494E-01 | 1.06785E+00 |

| POINT NO | SX | SA | XP | YP |
|---|---|---|---|---|
| 12 | -5.74648E-01 | 1.04252E+00 | -7.24024E-01 | 1.01673E+00 |
| 13 | -5.47376E-01 | 9.93842E-01 | -7.00530E-01 | 9.66137E-01 |
| 14 | -6.21177E-01 | 9.45622E-01 | -6.77013E-01 | 9.14945E-01 |
| 15 | -5.94550E-01 | 8.97878E-01 | -6.53472E-01 | 8.66223E-01 |
| 16 | -5.68032E-01 | 8.50630E-01 | -6.29907E-01 | 8.16992E-01 |
| 17 | -5.41397E-01 | 8.03893E-01 | -6.06321E-01 | 7.68270E-01 |
| 18 | -5.15257E-01 | 7.57687E-01 | -5.82713E-01 | 7.20077E-01 |
| 19 | -4.89010E-01 | 7.12030E-01 | -5.59045E-01 | 6.72439E-01 |
| 20 | -4.62355E-01 | 6.65934E-01 | -5.35435E-01 | 6.23349E-01 |
| 21 | -4.35739E-01 | 6.24415E-01 | -5.11744E-01 | 5.78849E-01 |
| 22 | -4.10510E-01 | 5.74452E-01 | -4.88064E-01 | 5.32943E-01 |
| 23 | -3.84916E-01 | 5.75173E-01 | -4.64329E-01 | 4.87648E-01 |
| 24 | -3.59098E-01 | 4.92472E-01 | -4.40556E-01 | 4.42975E-01 |
| 25 | -3.33357E-01 | 4.50406E-01 | -4.16740E-01 | 3.98942E-01 |
| 26 | -3.07636E-01 | 4.03764E-01 | -3.92976E-01 | 3.55562E-01 |
| 27 | -2.82035E-01 | 3.62215E-01 | -3.63958E-01 | 3.12843E-01 |
| 28 | -2.56545E-01 | 3.23114E-01 | -3.44925E-01 | 2.70799E-01 |
| 29 | -2.31062E-01 | 2.83692E-01 | -3.20342E-01 | 2.29439E-01 |
| 30 | -2.05633E-01 | 2.44955E-01 | -2.96831E-01 | 1.87776E-01 |
| 31 | -1.80252E-01 | 2.11912E-01 | -2.72645E-01 | 1.48622E-01 |
| 32 | -1.54916E-01 | 1.74576E-01 | -2.48378E-01 | 1.09582E-01 |
| 33 | -1.29625E-01 | 1.37951E-01 | -2.24025E-01 | 7.10652E-02 |
| 34 | -1.04361E-01 | 1.02042E-01 | -1.93585E-01 | 3.32801E-02 |
| 35 | -7.91973E-02 | 6.63597E-02 | -1.75040E-01 | -3.76186E-03 |
| 36 | -5.40408E-02 | 3.24105E-02 | -1.50401E-01 | -4.00573E-02 |
| 37 | -2.89548E-02 | -1.30120E-03 | -1.25664E-01 | -7.56017E-02 |
| 38 | -3.91863E-03 | -3.42718E-02 | -1.00829E-01 | -1.10369E-01 |
| 39 | 2.10520E-02 | -6.64375E-02 | -7.58974E-02 | -1.44410E-01 |
| 40 | 4.53456E-02 | -9.73723E-02 | -5.08728E-02 | -1.77626E-01 |
| 41 | 7.03531E-02 | -1.24697E-01 | -2.57574E-02 | -2.10141E-01 |
| 42 | 9.56707E-02 | -1.54571E-01 | -5.34266E-04 | -2.41846E-01 |
| 43 | 1.29426E-01 | -1.87894E-01 | 2.47367E-02 | -2.72763E-01 |
| 44 | 1.45124E-01 | -2.15363E-01 | 5.01105E-02 | -3.02912E-01 |
| 45 | 1.69756E-01 | -2.44061E-01 | 7.55652E-02 | -3.32273E-01 |
| 46 | 1.94349E-01 | -2.71052E-01 | 1.01095E-01 | -3.60853E-01 |
| 47 | 2.18676E-01 | -2.97278E-01 | 1.26706E-01 | -3.88647E-01 |
| 48 | 2.43345E-01 | -3.22752E-01 | 1.52345E-01 | -4.15660E-01 |
| 49 | 2.67762E-01 | -3.47509E-01 | 1.78134E-01 | -4.41891E-01 |
| 50 | 2.92123E-01 | -3.71531E-01 | 2.03953E-01 | -4.67338E-01 |
| 51 | 3.16410E-01 | -3.94405E-01 | 2.29542E-01 | -4.91995E-01 |
| 52 | 3.40635E-01 | -4.17449E-01 | 2.55502E-01 | -5.15863E-01 |
| 53 | 3.64895E-01 | -4.37370E-01 | 2.81337E-01 | -5.38941E-01 |
| 54 | 3.89039E-01 | -4.60618E-01 | 3.07946E-01 | -5.61226E-01 |
| 55 | 4.13150E-01 | -4.81209E-01 | 3.34132E-01 | -5.82719E-01 |
| 56 | 4.37221E-01 | -5.01159E-01 | 3.60394E-01 | -6.03423E-01 |
| 57 | 4.61257E-01 | -5.20484E-01 | 3.85732E-01 | -6.23337E-01 |
| 58 | 4.85234E-01 | -5.33203E-01 | 4.13146E-01 | -5.42456E-01 |
| 59 | 5.09249E-01 | -5.57333E-01 | 4.39633E-01 | -6.60814E-01 |
| 60 | 5.33218E-01 | -5.74895E-01 | 4.66192E-01 | -6.73866E-01 |
| 61 | 5.57190E-01 | -5.91909E-01 | 4.92819E-01 | -5.91189E-01 |
| 62 | 5.81142E-01 | -6.04395E-01 | 5.19513E-01 | -7.11227E-01 |
| 63 | 6.05117E-01 | -6.24376E-01 | 5.46270E-01 | -7.26514E-01 |
| 64 | 6.29109E-01 | -6.33873E-01 | 5.73085E-01 | -7.41056E-01 |
| 65 | 6.53123E-01 | -5.54910E-01 | 5.99955E-01 | -7.54667E-01 |
| 66 | 6.77154E-01 | -6.69511E-01 | 6.26874E-01 | -7.67961E-01 |
| 67 | 7.01237E-01 | -6.83697E-01 | 6.53836E-01 | -7.30351E-01 |
| 68 | 7.25346E-01 | -6.94040E-01 | 6.80832E-01 | -7.92055E-01 |

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| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 69 | 7.49495E-01 | -7.10925E-01 | 7.07852E-01 | -8.03035E-01 |
| 70 | 7.73647E-01 | -7.24015E-01 | 7.34888E-01 | -8.13469E-01 |
| 71 | 7.97928E-01 | -7.36785E-01 | 7.61931E-01 | -8.23218E-01 |
| 72 | 9.22217E-01 | -7.49266E-01 | 7.88975E-01 | -8.32354E-01 |
| 73 | 8.46553E-01 | -7.61482E-01 | 8.16012E-01 | -8.40897E-01 |
| 74 | 8.70950E-01 | -7.73459E-01 | 8.43039E-01 | -8.48871E-01 |
| 75 | 8.95394E-01 | -7.85224E-01 | 8.70052E-01 | -8.56297E-01 |
| 76 | 8.19319E-01 | -7.96804E-01 | 8.97047E-01 | -8.63199E-01 |
| 77 | 3.44433E-01 | -8.03228E-01 | 9.24024E-01 | -8.69600E-01 |
| 78 | 3.69022E-01 | -8.13525E-01 | 9.50984E-01 | -8.75525E-01 |
| 79 | 9.93654E-01 | -8.30725E-01 | 9.77927E-01 | -8.81000E-01 |
| 80 | 1.01832E+00 | -8.41814E-01 | 1.00486E+00 | -8.86033E-01 |

| POINT NO | XSEMI | YSEMI |
|---|---|---|
| 1 | -9.81124E-01 | 1.59697E+00 |
| 2 | -9.81333E-01 | 1.59748E+00 |
| 3 | -9.81489E-01 | 1.59801E+00 |
| 4 | -9.81591E-01 | 1.59855E+00 |
| 5 | -9.81636E-01 | 1.59910E+00 |
| 6 | -9.81624E-01 | 1.59965E+00 |
| 7 | -9.81556E-01 | 1.60020E+00 |
| 8 | -9.81432E-01 | 1.60074E+00 |
| 9 | -9.81254E-01 | 1.60126E+00 |
| 10 | -9.81023E-01 | 1.60176E+00 |
| 11 | -9.80743E-01 | 1.60223E+00 |
| 12 | -9.80415E-01 | 1.60267E+00 |
| 13 | -9.80044E-01 | 1.60307E+00 |
| 14 | -9.79635E-01 | 1.60343E+00 |
| 15 | -9.79190E-01 | 1.60375E+00 |
| 16 | -9.78716E-01 | 1.60402E+00 |
| 17 | -9.78217E-01 | 1.60423E+00 |
| 18 | -9.77699E-01 | 1.60439E+00 |
| 19 | -9.77167E-01 | 1.60450E+00 |
| 20 | -9.76628E-01 | 1.60454E+00 |
| 21 | -9.76087E-01 | 1.60453E+00 |
| 22 | -9.75550E-01 | 1.60446E+00 |
| 23 | -9.75023E-01 | 1.60434E+00 |
| 24 | -9.74512E-01 | 1.60416E+00 |
| 25 | -9.74023E-01 | 1.60392E+00 |
| 26 | -9.73561E-01 | 1.60764E+00 |
| 27 | -9.73129E-01 | 1.60330E+00 |
| 28 | -9.72735E-01 | 1.60293E+00 |
| 29 | -9.72381E-01 | 1.60251E+00 |
| 30 | -9.72073E-01 | 1.60206E+00 |
| 31 | -9.71812E-01 | 1.60157E+00 |

SECTION NUMBER 7  I/? = 9.0000
●●●●●●●●●●●●●●●●●●●●●●●●●●●

SECTION PROPERTIES

SECTION AREA                              = 2.8828E-01

LOCATION OF CENTROID         XBAR =  -9.0420E-03
RELATIVE TO STACK AXIS       YBAF =   1.2631E-03

SECOND MOMENTS OF AREA       IX  =  1.1530E-01
ABOUT CENTROID               IY  =  6.0303E-02
                             IXY = -8.5805E-02

PRINCIPAL SECOND MOMENTS     IPX =  1.5073E-01  (AT 36.87 DEGREES TO 'X' AXIS)
OF AREA ABOUT CENTROID       IPY =  1.0636E-03  (AT 36.87 DEGREES TO 'Y' AXIS)

TORSIONAL CONSTANT                 =  1.0001E-03

SECTION COORDINATES

| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 1  | -3.71770E-01 | 1.65474E+00 | -9.31206E-01 | 1.65023E+00 |
| 2  | -3.44731E-01 | 1.60007E+00 | -9.57882E-01 | 1.59379E+00 |
| 3  | -3.17692E-01 | 1.54567E+00 | -9.34553E-01 | 1.53761E+00 |
| 4  | -3.90555E-01 | 1.49156E+00 | -9.11215E-01 | 1.48171E+00 |
| 5  | -9.63325E-01 | 1.43775E+00 | -8.87864E-01 | 1.42612E+00 |
| 6  | -3.36618E-01 | 1.31428E+00 | -8.64497E-01 | 1.37085E+00 |
| 7  | -8.03608E-01 | 1.33116E+00 | -8.41115E-01 | 1.31593E+00 |
| 8  | -7.82030E-01 | 1.27641E+00 | -8.17703E-01 | 1.26139E+00 |
| 9  | -7.55650E-01 | 1.22605E+00 | -7.94269E-01 | 1.20723E+00 |
| 10 | -7.29762E-01 | 1.17412E+00 | -7.70805E-01 | 1.15343E+00 |
| 11 | -7.01812E-01 | 1.12262E+00 | -7.47317E-01 | 1.10019E+00 |
| 12 | -6.75148E-01 | 1.07158E+00 | -7.23794E-01 | 1.04734E+00 |
| 13 | -6.42264E-01 | 1.02102E+00 | -7.0.239E-01 | 9.94960E-01 |
| 14 | -5.21639E-01 | 9.70955E-01 | -6.76450E-01 | 9.43078E-01 |
| 15 | -5.94878E-01 | 9.24408E-01 | -6.53028E-01 | 3.91709E-01 |
| 16 | -5.68290E-01 | 8.72398E-01 | -6.29371E-01 | 3.40874E-01 |
| 17 | -5.41740E-01 | 8.23941E-01 | -6.05681E-01 | 7.90533E-01 |
| 18 | -5.153.0E-01 | 7.76055E-01 | -5.81957E-01 | 7.43871E-01 |
| 19 | -4.85011E-01 | 7.23758E-01 | -5.58200E-01 | 6.91740E-01 |
| 20 | -4.62734E-01 | 6.82063E-01 | -5.34.11E-01 | 6.43212E-01 |
| 21 | -4.35549E-01 | 6.34985E-01 | -5.10587E-01 | 5.95303E-01 |
| 22 | -4.10443E-01 | 5.50540E-01 | -4.86726E-01 | 5.43025E-01 |
| 23 | -3.84416E-01 | 5.45738E-01 | -4.62924E-01 | 5.01393E-01 |
| 24 | -3.56465E-01 | 5.01590E-01 | -4.38878E-01 | 4.55421E-01 |
| 25 | -3.32617E-01 | 4.53111E-01 | -4.14884E-01 | 4.10121E-01 |
| 26 | -3.00779E-01 | 4.15309E-01 | -3.90837E-01 | 3.65505E-01 |
| 27 | -2.81037E-01 | 3.73192E-01 | -3.65736E-01 | 3.21553E-01 |
| 28 | -2.55558E-01 | 3.31770E-01 | -3.42574E-01 | 2.76365E-01 |
| 29 | -2.29738E-01 | 2.91053E-01 | -3.18349E-01 | 2.35860E-01 |
| 30 | -2.04173E-01 | 2.51047E-01 | -2.94054E-01 | 1.94078E-01 |
| 31 | -1.78650E-01 | 2.11756E-01 | -2.69686E-01 | 1.53024E-01 |
| 32 | -1.53197E-01 | 1.73190E-01 | -2.45241E-01 | 1.12715E-01 |
| 33 | -1.27738E-01 | 1.35350E-01 | -2.20715E-01 | 7.31462E-02 |
| 34 | -1.02419E-01 | 9.82424E-02 | -1.96103E-01 | 3.43272E-02 |
| 35 | -7.71053E-02 | 6.13732E-02 | -1.71402E-01 | -3.73413E-03 |

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| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 36 | -6.13472E-02 | 2.62400E-02 | -1.46611E-01 | -4.10353E-02 |
| 37 | -2.66415E-02 | -8.63110E-03 | -1.21731E-01 | -7.75770E-02 |
| 38 | -1.49012E-03 | -4.27619E-02 | -9.67634E-02 | -1.13349E-01 |
| 39 | 2.36066E-02 | -7.64421E-02 | -7.17091E-02 | -1.48346E-01 |
| 40 | 4.86434E-02 | -1.08769E-01 | -4.65694E-02 | -1.82565E-01 |
| 41 | 7.36350E-02 | -1.40643E-01 | -2.13467E-02 | -2.16013E-01 |
| 42 | 9.85665E-02 | -1.71763E-01 | 3.95637E-03 | -2.48677E-01 |
| 43 | 1.23443E-01 | -2.02132E-01 | 2.33375E-02 | -2.80560E-01 |
| 44 | 1.48265E-01 | -2.31749E-01 | 5.47944E-02 | -3.11661E-01 |
| 45 | 1.73032E-01 | -2.60617E-01 | 8.03246E-02 | -3.41980E-01 |
| 46 | 1.97747E-01 | -2.83739E-01 | 1.05926E-01 | -3.71513E-01 |
| 47 | 2.22408E-01 | -3.1C... | 1.31595E-01 | -4.00275E-01 |
| 48 | 2.47016E-01 | -3.42762E-01 | 1.57329E-01 | -4.28254E-01 |
| 49 | 2.71576E-01 | -3.63675E-01 | 1.83127E-01 | -4.55454E-01 |
| 50 | 2.96032E-01 | -3.93869E-01 | 2.08991E-01 | -4.81874E-01 |
| 51 | 3.20533E-01 | -4.18357E-01 | 2.34920E-01 | -5.07513E-01 |
| 52 | 3.44330E-01 | -4.42154E-01 | 2.60918E-01 | -5.32370E-01 |
| 53 | 3.69272E-01 | -4.65272E-01 | 2.86982E-01 | -5.56446E-01 |
| 54 | 3.93551E-01 | -4.87727E-01 | 3.13115E-01 | -5.79743E-01 |
| 55 | 4.17794E-01 | -5.03534E-01 | 3.39315E-01 | -6.02264E-01 |
| 56 | 4.41988E-01 | -5.30712E-01 | 3.65520E-01 | -6.24013E-01 |
| 57 | 4.66131E-01 | -5.51276E-01 | 3.91909E-01 | -6.44995E-01 |
| 58 | 4.90232E-01 | -5.71245E-01 | 4.18285E-01 | -6.65214E-01 |
| 59 | 5.14246E-01 | -5.90638E-01 | 4.44745E-01 | -6.84679E-01 |
| 60 | 5.35322E-01 | -6.09475E-01 | 4.71244E-01 | -7.03396E-01 |
| 61 | 5.62321E-01 | -6.27776E-01 | 4.97792E-01 | -7.21376E-01 |
| 62 | 5.86296E-01 | -6.45562E-01 | 5.24383E-01 | -7.38629E-01 |
| 63 | 6.10251E-01 | -6.62856E-01 | 5.51011E-01 | -7.55167E-01 |
| 64 | 6.34193E-01 | -6.79678E-01 | 5.77671E-01 | -7.71002E-01 |
| 65 | 6.58125E-01 | -6.96051E-01 | 6.04356E-01 | -7.86148E-01 |
| 66 | 6.82032E-01 | -7.11997E-01 | 6.31061E-01 | -8.00623E-01 |
| 67 | 7.05978E-01 | -7.27538E-01 | 6.57777E-01 | -8.14441E-01 |
| 68 | 7.29307E-01 | -7.42696E-01 | 6.84497E-01 | -8.27619E-01 |
| 69 | 7.53944E-01 | -7.57493E-01 | 7.11214E-01 | -8.40174E-01 |
| 70 | 7.77792E-01 | -7.71953E-01 | 7.37923E-01 | -8.52124E-01 |
| 71 | 8.01756E-01 | -7.86099E-01 | 7.64618E-01 | -8.63484E-01 |
| 72 | 8.25737E-01 | -7.99954E-01 | 7.91293E-01 | -8.74266E-01 |
| 73 | 8.49739E-01 | -8.13543E-01 | 8.17947E-01 | -8.84539E-01 |
| 74 | 8.73763E-01 | -8.26890E-01 | 8.44574E-01 | -8.94268E-01 |
| 75 | 8.97811E-01 | -8.40021E-01 | 8.71175E-01 | -9.03495E-01 |
| 76 | 9.21841E-01 | -8.52960E-01 | 8.97749E-01 | -9.12244E-01 |
| 77 | 9.45974E-01 | -8.65735E-01 | 9.24295E-01 | -9.20537E-01 |
| 78 | 9.70036E-01 | -8.73371E-01 | 9.50816E-01 | -9.28401E-01 |
| 79 | 9.94218E-01 | -8.90897E-01 | 9.77316E-01 | -9.35859E-01 |
| 80 | 1.01836E+00 | -9.03293E-01 | 1.00380E+00 | -9.42923E-01 |

| POINT NO | XSEMI | YSEMI |
|---|---|---|
| 1 | -9.81206E-01 | 1.65023E+00 |
| 2 | -9.81410E-01 | 1.65075E+00 |
| 3 | -9.81560E-01 | 1.65129E+00 |
| 4 | -9.81654E-01 | 1.65184E+00 |
| 5 | -9.81691E-01 | 1.65240E+00 |
| 6 | -9.81672E-01 | 1.65296E+00 |
| 7 | -9.81534E-01 | 1.65351E+00 |
| 8 | -9.81463E-01 | 1.65406E+00 |
| 9 | -9.81277E-01 | 1.65458E+00 |

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| POINT NO | XSEMI | YSEMI |
|---|---|---|
| 10 | -9.81038E-01 | 1.65509E+00 |
| 11 | -9.80749E-01 | 1.65556E+00 |
| 12 | -9.80413E-01 | 1.65600E+00 |
| 13 | -9.80036E-01 | 1.65640E+00 |
| 14 | -9.79616E-01 | 1.65676E+00 |
| 15 | -9.79155E-01 | 1.65708E+00 |
| 16 | -9.78643E-01 | 1.65734E+00 |
| 17 | -9.78178E-01 | 1.65755E+00 |
| 18 | -9.77554E-01 | 1.65770E+00 |
| 19 | -9.77116E-01 | 1.65780E+00 |
| 20 | -9.76574E-01 | 1.65784E+00 |
| 21 | -9.76030E-01 | 1.65782E+00 |
| 22 | -9.75491E-01 | 1.65774E+00 |
| 23 | -9.74952E-01 | 1.65760E+00 |
| 24 | -9.74451E-01 | 1.65741E+00 |
| 25 | -9.73961E-01 | 1.65716E+00 |
| 26 | -9.73500E-01 | 1.65686E+00 |
| 27 | -9.73071E-01 | 1.65652E+00 |
| 28 | -9.72679E-01 | 1.65613E+00 |
| 29 | -9.72329E-01 | 1.65570E+00 |
| 30 | -9.72025E-01 | 1.65523E+00 |
| 31 | -9.71770E-01 | 1.65474E+00 |

SECTION NUMBER 8  'Y' = 8.2500
**************************************************

SECTION PROPERTIES

| | | |
|---|---|---|
| SECTION AREA | = | 2.87732E-01 |
| LOCATION OF CENTROID | XBAR = | -1.7523E-02 |
| RELATIVE TO STACK AXIS | YBAR = | 2.6556E-03 |
| SECOND MOMENTS OF AREA | IX = | 1.2898E-01 |
| ABOUT CENTROID | IY = | 5.603dE-02 |
| | IXY = | -9.0303E-02 |
| PRINCIPAL SECOND MOMENTS | IPX = | 1.9314E-01 (AT 35.39 DEGREES TO 'X' AXIS) |
| OF AREA ABOUT CENTROID | IPY = | 1.8786E-03 (AT 35.39 DEGREES TO 'Y' AXIS) |
| TORSIONAL CONSTANT | = | 3.3000E-04 |

SECTION COORDINATES

| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 1 | -9.71519E-01 | 1.72369E+00 | -9.81140E-02 | 1.71919E+00 |
| 2 | -3.44525E-01 | 1.66586E+00 | -9.57830E-01 | 1.65963E+00 |
| 3 | -3.17338E-01 | 1.60836E+00 | -9.34516E-01 | 1.60042E+00 |
| 4 | -3.90558E-01 | 1.55122E+00 | -9.11194E-01 | 1.54153E+00 |
| 5 | -3.63590E-01 | 1.49447E+00 | -8.87858E-01 | 1.48311E+03 |
| 6 | -9.36515E-01 | 1.43810E+00 | -8.64505E-01 | 1.42505E+00 |
| 7 | -9.03697E-01 | 1.38216E+00 | -8.41130E-01 | 1.36741E+00 |
| 8 | -7.82778E-01 | 1.32665E+00 | -9.17729E-01 | 1.31021E+00 |
| 9 | -7.55382E-01 | 1.27159E+00 | -7.94299E-01 | 1.25346E+00 |
| 10 | -7.29011E-01 | 1.21700E+00 | -7.70835E-01 | 1.19713E+00 |
| 11 | -7.02171E-01 | 1.16291E+00 | -7.47335E-01 | 1.14142E+00 |

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| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 12 | -6.75353E-01 | 1.10932E+00 | -7.23795E-01 | 1.08615E+00 |
| 13 | -5.48534E-01 | 1.05625E+00 | -7.00214E-01 | 1.03141E+00 |
| 14 | -6.21666E-01 | 1.00373E+00 | -6.76568E-01 | 3.77213E-01 |
| 15 | -5.95145E-01 | 9.51772E-01 | -6.52916E-01 | 9.23579E-01 |
| 16 | -5.64557E-01 | 9.00369E-01 | -6.29197E-01 | 8.70523E-01 |
| 17 | -5.41395E-01 | 8.49602E-01 | -6.05430E-01 | 8.18061E-01 |
| 18 | -5.15475E-01 | 7.93426E-01 | -5.81615E-01 | 7.66210E-01 |
| 19 | -4.89025E-01 | 7.49883E-01 | -5.57751E-01 | 7.14986E-01 |
| 20 | -4.62650E-01 | 7.03983E-01 | -5.33838E-01 | 6.64404E-01 |
| 21 | -4.36319E-01 | 6.52740E-01 | -5.09875E-01 | 6.14479E-01 |
| 22 | -4.10097E-01 | 6.05170E-01 | -4.85863E-01 | 5.65224E-01 |
| 23 | -3.83925E-01 | 5.58282E-01 | -4.61798E-01 | 5.16654E-01 |
| 24 | -3.57822E-01 | 5.12088E-01 | -4.37679E-01 | 4.68779E-01 |
| 25 | -3.31747E-01 | 4.66598E-01 | -4.13504E-01 | 4.21612E-01 |
| 26 | -3.05819E-01 | 4.21821E-01 | -3.89271E-01 | 3.75162E-01 |
| 27 | -2.79318E-01 | 3.77763E-01 | -3.64978E-01 | 3.29440E-01 |
| 28 | -2.54090E-01 | 3.34432E-01 | -3.40623E-01 | 2.84453E-01 |
| 29 | -2.28306E-01 | 2.91835E-01 | -3.16203E-01 | 2.40209E-01 |
| 30 | -2.02593E-01 | 2.49976E-01 | -2.91716E-01 | 1.96744E-01 |
| 31 | -1.76940E-01 | 2.03858E-01 | -2.67158E-01 | 1.53980E-01 |
| 32 | -1.51346E-01 | 1.68465E-01 | -2.42529E-01 | 1.12006E-01 |
| 33 | -1.25811E-01 | 1.28857E-01 | -2.17825E-01 | 7.09799E-02 |
| 34 | -1.00337E-01 | 8.99409E-02 | -1.93046E-01 | 3.03596E-02 |
| 35 | -7.49225E-02 | 5.15590E-02 | -1.68191E-01 | -9.30565E-03 |
| 36 | -4.95692E-02 | 1.44961E-02 | -1.43258E-01 | -4.81976E-02 |
| 37 | -2.42771E-02 | -2.21122E-02 | -1.18250E-01 | -8.63142E-02 |
| 38 | 9.53892E-04 | -5.73505E-02 | -9.31666E-02 | -1.23653E-01 |
| 39 | 2.61238E-02 | -9.30439E-02 | -6.80104E-02 | -1.60205E-01 |
| 40 | 5.12329E-02 | -1.27360E-01 | -4.27826E-02 | -1.95976E-01 |
| 41 | 7.62815E-02 | -1.60930E-01 | -1.74849E-02 | -2.30962E-01 |
| 42 | 1.01270E-01 | -1.93731E-01 | 7.88129E-03 | -2.65163E-01 |
| 43 | 1.26200E-01 | -2.25773E-01 | 3.33138E-02 | -2.98579E-01 |
| 44 | 1.51071E-01 | -2.57056E-01 | 5.88106E-02 | -3.31209E-01 |
| 45 | 1.75865E-01 | -2.87583E-01 | 8.43698E-02 | -3.63055E-01 |
| 46 | 2.00642E-01 | -3.17357E-01 | 1.09989E-01 | -3.94117E-01 |
| 47 | 2.25345E-01 | -3.46381E-01 | 1.35667E-01 | -4.24397E-01 |
| 48 | 2.49994E-01 | -3.74660E-01 | 1.61401E-01 | -4.53897E-01 |
| 49 | 2.74587E-01 | -4.02202E-01 | 1.87192E-01 | -4.82615E-01 |
| 50 | 2.99123E-01 | -4.29020E-01 | 2.13043E-01 | -5.10550E-01 |
| 51 | 3.23598E-01 | -4.55125E-01 | 2.38955E-01 | -5.37701E-01 |
| 52 | 3.48013E-01 | -4.80530E-01 | 2.64928E-01 | -5.64068E-01 |
| 53 | 3.72365E-01 | -5.02249E-01 | 2.90963E-01 | -5.89653E-01 |
| 54 | 3.96658E-01 | -5.24296E-01 | 3.17058E-01 | -6.14459E-01 |
| 55 | 4.20830E-01 | -5.52667E-01 | 3.43213E-01 | -6.38499E-01 |
| 56 | 4.45053E-01 | -5.75437E-01 | 3.69424E-01 | -6.61740E-01 |
| 57 | 4.69181E-01 | -5.97563E-01 | 3.95689E-01 | -6.84240E-01 |
| 58 | 4.93246E-01 | -6.19083E-01 | 4.22004E-01 | -7.05973E-01 |
| 59 | 5.17250E-01 | -6.40014E-01 | 4.48365E-01 | -7.26953E-01 |
| 60 | 5.41229E-01 | -6.60375E-01 | 4.74767E-01 | -7.47190E-01 |
| 61 | 5.65156E-01 | -6.80186E-01 | 5.01206E-01 | -7.66693E-01 |
| 62 | 5.89046E-01 | -6.99466E-01 | 5.27676E-01 | -7.85472E-01 |
| 63 | 6.12994E-01 | -7.19238E-01 | 5.54170E-01 | -8.03540E-01 |
| 64 | 6.36734E-01 | -7.36521E-01 | 5.80683E-01 | -8.20910E-01 |
| 65 | 6.60542E-01 | -7.54336E-01 | 6.07209E-01 | -8.37596E-01 |
| 66 | 6.84374E-01 | -7.71703E-01 | 6.33740E-01 | -8.53613E-01 |
| 67 | 7.08115E-01 | -7.86643E-01 | 6.60272E-01 | -8.68977E-01 |
| 68 | 7.31892E-01 | -8.05175E-01 | 6.86800E-01 | -8.83702E-01 |

| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 69 | 7.55669E-01 | -8.21321E-01 | 7.13317E-01 | -8.97804E-01 |
| 70 | 7.79453E-01 | -8.37102E-01 | 7.39820E-01 | -9.11299E-01 |
| 71 | 8.03247E-01 | -8.52542E-01 | 7.66305E-01 | -9.24206E-01 |
| 72 | 8.27057E-01 | -8.67661E-01 | 7.92769E-01 | -9.36543E-01 |
| 73 | 8.50886E-01 | -8.82484E-01 | 8.19210E-01 | -9.48329E-01 |
| 74 | 8.74737E-01 | -8.97033E-01 | 8.45625E-01 | -9.59587E-01 |
| 75 | 8.98512E-01 | -9.11334E-01 | 8.72015E-01 | -9.70338E-01 |
| 76 | 9.22514E-01 | -9.25412E-01 | 8.95380E-01 | -9.80605E-01 |
| 77 | 9.46441E-01 | -9.39293E-01 | 9.24721E-01 | -9.90413E-01 |
| 78 | 9.70394E-01 | -9.53003E-01 | 9.51039E-01 | -9.99787E-01 |
| 79 | 9.94370E-02 | -9.65569E-01 | 9.77340E-01 | -1.008750E+00 |
| 80 | 1.01837E+00 | -9.79969E-01 | 1.00363E+00 | -1.017330E+00 |

| POINT NO | XSEMI | YSEMI |
|---|---|---|
| 1 | -9.81140E-01 | 1.71919E+00 |
| 2 | -9.81337E-01 | 1.71972E+00 |
| 3 | -9.81479E-01 | 1.72028E+00 |
| 4 | -9.81566E-01 | 1.72085E+00 |
| 5 | -9.81594E-01 | 1.72142E+00 |
| 6 | -9.81565E-01 | 1.72199E+00 |
| 7 | -9.81479E-01 | 1.72256E+00 |
| 8 | -9.81336E-01 | 1.72312E+00 |
| 9 | -9.81139E-01 | 1.72365E+00 |
| 10 | -9.80888E-01 | 1.72417E+00 |
| 11 | -9.80588E-01 | 1.72465E+00 |
| 12 | -9.80241E-01 | 1.72510E+00 |
| 13 | -9.79851E-01 | 1.72551E+00 |
| 14 | -9.79423E-01 | 1.72587E+00 |
| 15 | -9.78960E-01 | 1.72618E+00 |
| 16 | -9.78469E-01 | 1.72645E+00 |
| 17 | -9.77955E-01 | 1.72665E+00 |
| 18 | -9.77422E-01 | 1.72681E+00 |
| 19 | -9.76878E-01 | 1.72690E+00 |
| 20 | -9.76327E-01 | 1.72693E+00 |
| 21 | -9.75777E-01 | 1.72690E+00 |
| 22 | -9.75233E-01 | 1.72681E+00 |
| 23 | -9.74730E-01 | 1.72667E+00 |
| 24 | -9.74186E-01 | 1.72646E+00 |
| 25 | -9.73635E-01 | 1.72620E+00 |
| 26 | -9.73233E-01 | 1.72599E+00 |
| 27 | -9.72805E-01 | 1.72553E+00 |
| 28 | -9.72415E-01 | 1.72513E+00 |
| 29 | -9.72039E-01 | 1.72468E+00 |
| 30 | -9.71769E-01 | 1.72420E+00 |
| 31 | -9.71519E-01 | 1.72369E+00 |

SECTION NUMBER 9    ??? = 8.5000

SECTION PROPERTIES

SECTION AREA = 2.3319E-01

LOCATION OF CENTROID
RELATIVE TO STACK AXIS
XBAR = -2.6730E-02
YBAR = -3.9444E-03

SECOND MOMENTS OF AREA
ABOUT CENTROID
IX = 1.4991E-01
IY = 6.7072E-02
IXY = -9.8253E-02

PRINCIPAL SECOND MOMENTS
OF AREA ABOUT CENTROID
IPX = 2.1511E-01 (AT 33.57 DEGREES TO 'X' AXIS)
IPY = 1.8536E-03 (AT 33.57 DEGREES TO 'Y' AXIS)

TORSIONAL CONSTANT = 9.0356E-04

SECTION COORDINATES

| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 1 | -3.71472E-01 | 1.80704E+00 | -9.81296E-01 | 1.80251E+00 |
| 2 | -9.44449E-01 | 1.74559E+00 | -9.57969E-01 | 1.73937E+00 |
| 3 | -3.17441E-01 | 1.68454E+00 | -9.34646E-01 | 1.67664E+00 |
| 4 | -8.90450E-01 | 1.62390E+00 | -9.11322E-01 | 1.61433E+00 |
| 5 | -8.63479E-01 | 1.56369E+00 | -8.87991E-01 | 1.55246E+00 |
| 6 | -8.36529E-01 | 1.50393E+00 | -8.64648E-01 | 1.49105E+00 |
| 7 | -8.09601E-01 | 1.44464E+00 | -8.41286E-01 | 1.43012E+00 |
| 8 | -7.82697E-01 | 1.35583E+00 | -8.17905E-01 | 1.36368E+00 |
| 9 | -7.55819E-01 | 1.32752E+00 | -7.94495E-01 | 1.30975E+00 |
| 10 | -7.28967E-01 | 1.26973E+00 | -7.71051E-01 | 1.25036E+00 |
| 11 | -7.02144E-01 | 1.21247E+00 | -7.47571E-01 | 1.19150E+00 |
| 12 | -6.75352E-01 | 1.15576E+00 | -7.24050E-01 | 1.13321E+00 |
| 13 | -6.48592E-01 | 1.09951E+00 | -7.00484E-01 | 1.07549E+00 |
| 14 | -6.21866E-01 | 1.04405E+00 | -6.76857E-01 | 1.01836E+00 |
| 15 | -5.95177E-01 | 9.83087E-01 | -6.53199E-01 | 9.61029E-01 |
| 16 | -5.66528E-01 | 9.34734E-01 | -6.29475E-01 | 9.05921E-01 |
| 17 | -5.41921E-01 | 8.81010E-01 | -6.05692E-01 | 8.50646E-01 |
| 18 | -5.15362E-01 | 8.27933E-01 | -5.81850E-01 | 7.96020E-01 |
| 19 | -4.88554E-01 | 7.75515E-01 | -5.57946E-01 | 7.42056E-01 |
| 20 | -4.62401E-01 | 7.23774E-01 | -5.33979E-01 | 6.84767E-01 |
| 21 | -4.36005E-01 | 6.72721E-01 | -5.09950E-01 | 6.36169E-01 |
| 22 | -4.09669E-01 | 6.22369E-01 | -4.85856E-01 | 5.84274E-01 |
| 23 | -3.83335E-01 | 5.72728E-01 | -4.61700E-01 | 5.33093E-01 |
| 24 | -3.57185E-01 | 5.23809E-01 | -4.37479E-01 | 4.82637E-01 |
| 25 | -3.31039E-01 | 4.75620E-01 | -4.13194E-01 | 4.32917E-01 |
| 26 | -3.04960E-01 | 4.28170E-01 | -3.88844E-01 | 3.83941E-01 |
| 27 | -2.78948E-01 | 3.81455E-01 | -3.64428E-01 | 3.35718E-01 |
| 28 | -2.53004E-01 | 3.35510E-01 | -3.39947E-01 | 2.85254E-01 |
| 29 | -2.27128E-01 | 2.90310E-01 | -3.15400E-01 | 2.41558E-01 |
| 30 | -2.01321E-01 | 2.45869E-01 | -2.90786E-01 | 1.95633E-01 |
| 31 | -1.75583E-01 | 2.02189E-01 | -2.66105E-01 | 1.50484E-01 |
| 32 | -1.49916E-01 | 1.59273E-01 | -2.41359E-01 | 1.06116E-01 |
| 33 | -1.24320E-01 | 1.17120E-01 | -2.16547E-01 | 6.25316E-02 |
| 34 | -9.87934E-02 | 7.57335E-02 | -1.91649E-01 | 1.97317E-02 |
| 35 | -7.33473E-02 | 3.51171E-02 | -1.66727E-01 | -2.22826E-02 |

| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 36 | -4.79514E-02 | -4.72703E-03 | -1.41721E-01 | -5.35104E-02 |
| 37 | -2.26349E-02 | -4.34000F-02 | -1.16653E-01 | -1.03952E-01 |
| 38 | 2.61219E-03 | -8.20973E-02 | -9.15237E-02 | -1.43603E-01 |
| 39 | 2.77326F-02 | -1.19619E-01 | -6.63332F-02 | -1.82463E-01 |
| 40 | 5.29051E-02 | -1.56365E-01 | -4.10830E-02 | -2.20531E-01 |
| 41 | 7.79514E-02 | -1.92334E-01 | -1.57740E-02 | -2.57805E-01 |
| 42 | 1.02933E-01 | -2.27526E-01 | 9.59263E-03 | -2.94285E-01 |
| 43 | 1.27350E-01 | -2.61940E-01 | 3.50156E-02 | -3.29972E-01 |
| 44 | 1.52705E-01 | -2.95579E-01 | 6.04938E-02 | -3.54863E-01 |
| 45 | 1.77498E-01 | -3.24443E-01 | 8.62626E-02 | -3.98960E-01 |
| 46 | 2.02233E-01 | -3.60532E-01 | 1.11612E-01 | -4.32262E-01 |
| 47 | 2.26309F-01 | -3.91849E-01 | 1.37249E-01 | -4.64771E-01 |
| 48 | 2.51527E-01 | -4.52188E-01 | 1.52939E-01 | -4.95484E-01 |
| 49 | 2.70343E-01 | -4.81229E-01 | 1.88584E-01 | -5.27399E-01 |
| 50 | 3.00577E-01 | -5.04524E-01 | 2.14488E-01 | -5.57514E-01 |
| 51 | 3.25003F-01 | -5.37098E-01 | 2.40373E-01 | -5.95825E-01 |
| 52 | 3.49363E-01 | -5.63948F-01 | 2.66279E-01 | -5.15311E-01 |
| 53 | 3.73654F-01 | -5.90093E-01 | 2.92257E-01 | -6.43033E-01 |
| 54 | 3.97830E-01 | -6.15543E-01 | 3.18315E-01 | -5.59931E-01 |
| 55 | 4.22039E-01 | -6.43312E-01 | 3.44421E-01 | -5.96030E-01 |
| 56 | 4.46134F-01 | -6.64414E-01 | 3.70585E-01 | -7.21329E-01 |
| 57 | 4.70158E-01 | -6.57863E-01 | 3.96801E-01 | -7.45831E-01 |
| 58 | 4.94144E-01 | -7.10676E-01 | 4.23068E-01 | -7.69542E-01 |
| 59 | 5.18065E-01 | -7.32868E-01 | 4.49330E-01 | -7.92466E-01 |
| 60 | 5.41936E-01 | -7.54457E-01 | 4.75734E-01 | -8.14610E-01 |
| 61 | 5.65751E-01 | -7.54457E-01 | 5.02124E-01 | -3.35981E-01 |
| 62 | 5.89547E-01 | -7.75459E-01 | 5.28545E-01 | -8.56586E-01 |
| 63 | 6.13299E-01 | -7.58893E-01 | 5.54990E-01 | -8.76435E-01 |
| 64 | 6.37022E-01 | -8.16780E-01 | 5.81454E-01 | -3.95539E-01 |
| 65 | 6.60723E-01 | -8.35135E-01 | 6.07931E-01 | -9.13910E-01 |
| 66 | 6.84410E-01 | -8.53977E-01 | 6.34414E-01 | -9.31561E-01 |
| 67 | 7.08031E-01 | -8.72323E-01 | 6.60898E-01 | -3.48504E-01 |
| 68 | 7.31773E-01 | -8.91192E-01 | 6.87378E-01 | -3.54751E-01 |
| 69 | 7.55464E-01 | -9.07604E-01 | 7.13551E-01 | -9.80316E-01 |
| 70 | 7.73170E-01 | -9.24578E-01 | 7.40312E-01 | -9.95213E-01 |
| 71 | 8.02900E-01 | -9.41134E-01 | 7.66759E-01 | -1.00946E+00 |
| 72 | 8.26558E-01 | -9.57294E-01 | 7.93189E-01 | -1.02307E+00 |
| 73 | 8.50452E-01 | -9.73050E-01 | 8.19599E-01 | -1.03606E+00 |
| 74 | 8.74236E-01 | -9.85513E-01 | 8.45990E-01 | -1.04846E+00 |
| 75 | 8.98105E-01 | -1.00362E+00 | 8.72360E-01 | -1.05023E+00 |
| 76 | 9.22091E-01 | -1.01542E+00 | 8.98710E-01 | -1.07157E+00 |
| 77 | 9.46056E-01 | -1.03294E+00 | 9.25043E-01 | -1.08232E+00 |
| 78 | 9.70033E-01 | -1.04722E+00 | 9.51360E-01 | -1.09250E+00 |
| 79 | 9.94159E-01 | -1.05126E+00 | 9.77666E-01 | -1.10237E+00 |
| 80 | 1.01129E+00 | -1.07506E+00 | 1.00397E+00 | -1.11171E+00 |

| POINT NO | XSEMI | YSEMI |
|---|---|---|
| 1 | -1.81236E-01 | 1.80251E+00 |
| 2 | -9.81456E-01 | 1.80306E+00 |
| 3 | -3.81621E-01 | 1.80363E+00 |
| 4 | -3.51639E-01 | 1.80422E+00 |
| 5 | -3.81718E-01 | 1.80481E+00 |
| 6 | -3.81679E-01 | 1.80540E+00 |
| 7 | -3.81532E-01 | 1.80598E+00 |
| 8 | -9.81427E-01 | 1.80655E+00 |
| 9 | -9.81218E-01 | 1.80710E+00 |

| POINT NO | XSEMI | YSEMI |
|---|---|---|
| 10 | -3.80955E-01 | 1.80762E+00 |
| 11 | -3.80643E-01 | 1.80512E+00 |
| 12 | -3.80284E-01 | 1.80857E+00 |
| 13 | -3.79892E-01 | 1.80899E+00 |
| 14 | -3.79441E-01 | 1.80936E+00 |
| 15 | -3.78968E-01 | 1.80967E+00 |
| 16 | -3.78465E-01 | 1.80994E+00 |
| 17 | -3.77941E-01 | 1.81015E+00 |
| 18 | -3.77399E-01 | 1.81030E+00 |
| 19 | -3.76845E-01 | 1.81039E+00 |
| 20 | -3.76297E-01 | 1.81041E+00 |
| 21 | -3.75730E-01 | 1.81038E+00 |
| 22 | -3.75160E-01 | 1.81028E+00 |
| 23 | -3.74543E-01 | 1.81013E+00 |
| 24 | -3.74126E-01 | 1.80991E+00 |
| 25 | -3.73633E-01 | 1.80964E+00 |
| 26 | -3.73170E-01 | 1.80932E+00 |
| 27 | -3.72743E-01 | 1.80894E+00 |
| 28 | -3.72355E-01 | 1.80852E+00 |
| 29 | -3.72012E-01 | 1.80806E+00 |
| 30 | -3.71716E-01 | 1.80757E+00 |
| 31 | -3.71472E-01 | 1.80704E+00 |

SECTION NUMBER 10  'Z' = 8.7500
**************************************

SECTION PROPERTIES

| SECTION AREA | | = 3.0035E-01 |
|---|---|---|
| LOCATION OF CENTROID RELATIVE TO STACK AXIS | XBAR | = -3.8577E-02 |
| | YBAR | = -1.1973E-02 |
| SECOND MOMENTS OF AREA ABOUT CENTROID | IX | = 1.7580E-01 |
| | IY | = 6.8147E-02 |
| | IXY | = -1.0730E-01 |
| PRINCIPAL SECOND MOMENTS OF AREA ABOUT CENTROID | IPX | = 2.4201E-01 (AT 31.68 DEGREES TO 'X' AXIS) |
| | IPY | = 1.9321E-03 (AT 31.68 DEGREES TO 'Y' AXIS) |
| TORSIONAL CONSTANT | | = 8.8972E-04 |

SECTION COORDINATES

| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 1 | -.71260E-01 | .69915.. | -9.81326E-01 | 1.89458E+00 |
| 2 | -.64264E-01 | 1.83503E-01 | -9.58038E-01 | 1.82751E+00 |
| 3 | -9.17271E-01 | 1.76875E+00 | -9.34768E-01 | 1.76088E+00 |
| 4 | -5.9029?E-01 | 1.70422E+00 | -9.11454E-01 | 1.69472E+00 |
| 5 | -8.6333?E-01 | 1.64018E+00 | -8.88150E-01 | 1.62905E+00 |
| 6 | -8.36390E-01 | 1.57662E+00 | -8.64833E-01 | 1.56390E+00 |
| 7 | -8.09473E-01 | 1.51358E+00 | -8.41497E-01 | 1.49928E+00 |
| 8 | -7.82560E-01 | 1.45107E+00 | -8.18138E-01 | 1.43520E+00 |
| 9 | -7.55716E-01 | 1.38911E+00 | -7.94752E-01 | 1.37168E+00 |
| 10 | -7.28851E-01 | 1.32772E+00 | -7.71334E-01 | 1.30874E+00 |
| 11 | -7.02077E-01 | 1.26690E+00 | -7.47879E-01 | 1.24639E+00 |

| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 12 | -6.75306E-01 | 1.20666E+00 | -7.24354E-01 | 1.18465E+00 |
| 13 | -6.48570E-01 | 1.14704E+00 | -7.00844E-01 | 1.12353E+00 |
| 14 | -6.21869E-01 | 1.08803E+00 | -6.77256E-01 | 1.06304E+00 |
| 15 | -5.95206E-01 | 1.02966E+00 | -6.53615E-01 | 1.00319E+00 |
| 16 | -5.68582E-01 | 9.71922E-01 | -6.29918E-01 | 9.43992E-01 |
| 17 | -5.41998E-01 | 9.14849E-01 | -6.06162E-01 | 8.85466E-01 |
| 18 | -5.15460E-01 | 8.58466E-01 | -5.82343E-01 | 8.27620E-01 |
| 19 | -4.88959E-01 | 8.02726E-01 | -5.58460E-01 | 7.70466E-01 |
| 20 | -4.62529E-01 | 7.47702E-01 | -5.34511E-01 | 7.14014E-01 |
| 21 | -4.36142E-01 | 6.93366E-01 | -5.10495E-01 | 6.56277E-01 |
| 22 | -4.09814E-01 | 6.39785E-01 | -4.86410E-01 | 6.03264E-01 |
| 23 | -3.83544E-01 | 5.86911E-01 | -4.62258E-01 | 5.49947E-01 |
| 24 | -3.57336E-01 | 5.34774E-01 | -4.38038E-01 | 4.95455E-01 |
| 25 | -3.31192E-01 | 4.83380E-01 | -4.13749E-01 | 4.42674E-01 |
| 26 | -3.05114E-01 | 4.32735E-01 | -3.89392E-01 | 3.90654E-01 |
| 27 | -2.79105E-01 | 3.87650E-01 | -3.64970E-01 | 3.39402E-01 |
| 28 | -2.53166E-01 | 3.37283E-01 | -3.40479E-01 | 2.89925E-01 |
| 29 | -2.27299E-01 | 2.85373E-0. | -3.15922E-01 | 2.33224E-01 |
| 30 | -2.01505E-01 | 2.37935E-01 | -2.91299E-01 | 1.90317E-01 |
| 31 | -1.75735E-01 | 1.90991E-01 | -2.66612E-01 | 1.42196E-01 |
| 32 | -1.50141E-01 | 1.44972E-01 | -2.41860E-01 | 9.48699E-02 |
| 33 | -1.24571E-01 | 9.97336E-02 | -2.17047E-01 | 4.83432E-02 |
| 34 | -3.90753E-02 | 5.52857E-02 | -1.92173E-01 | 2.61816E-03 |
| 35 | -7.36537E-02 | 1.15312E-02 | -1.67238E-01 | -4.23035E-02 |
| 36 | -4.83051E-02 | -3.12266E-02 | -1.42244E-01 | -3.64767E-02 |
| 37 | -2.30241E-02 | -7.32826E-02 | -1.17192E-01 | -1.23719E-01 |
| 38 | 2.17958E-03 | -1.14532E-01 | -9.20804E-02 | -1.72210E-01 |
| 39 | 2.73157E-02 | -1.54971E-01 | -6.69111E-02 | -2.13885E-01 |
| 40 | 5.23953E-02 | -1.94598E-01 | -4.16840E-02 | -2.54733E-01 |
| 41 | 7.73386E-02 | -2.33408E-01 | -1.63994E-02 | -2.94267E-01 |
| 42 | 1.02328E-01 | -2.71397E-01 | 8.94212E-03 | -3.33967E-01 |
| 43 | 1.27205E-01 | -3.08562E-01 | 3.43403E-02 | -3.72335E-01 |
| 44 | 1.52021E-01 | -3.44900E-01 | 5.97947E-02 | -4.09875E-01 |
| 45 | 1.76778E-01 | -3.80411E-01 | 8.53052E-02 | -4.46573E-01 |
| 46 | 2.01479E-01 | -4.15089E-01 | 1.10871E-01 | -4.42431E-01 |
| 47 | 2.26125E-01 | -4.48935E-01 | 1.36493E-01 | -5.17447E-01 |
| 48 | 2.50712E-01 | -4.81951E-01 | 1.62176E-01 | -5.51611E-01 |
| 49 | 2.75238E-01 | -5.14144E-01 | 1.87922E-01 | -5.84918E-01 |
| 50 | 2.99702E-01 | -5.45518E-01 | 2.13736E-01 | -6.17363E-01 |
| 51 | 3.24100E-01 | -5.76078E-01 | 2.39519E-01 | -5.48937E-01 |
| 52 | 3.48433E-01 | -6.05831E-01 | 2.65573E-01 | -6.79643E-01 |
| 53 | 3.72700E-01 | -6.34787E-01 | 2.91597E-01 | -7.09470E-01 |
| 54 | 3.96303E-01 | -6.62956E-01 | 3.17691E-01 | -7.38422E-01 |
| 55 | 4.21043E-01 | -6.90346E-01 | 3.43851E-01 | -7.64496E-01 |
| 56 | 4.45121E-01 | -7.16970E-01 | 3.70076E-01 | -7.93692E-01 |
| 57 | 4.69140E-01 | -7.42839E-01 | 3.96362E-01 | -8.20013E-01 |
| 58 | 4.93104E-01 | -7.67966E-01 | 4.22705E-01 | -8.45462E-01 |
| 59 | 5.17015E-01 | -7.92373E-01 | 4.49098E-01 | -8.70042E-01 |
| 60 | 5.40878E-01 | -8.16069E-01 | 4.75538E-01 | -8.93760E-01 |
| 61 | 5.64698E-01 | -8.39074E-01 | 5.02017E-01 | -9.16623E-01 |
| 62 | 5.88479E-01 | -8.61405E-01 | 5.28528E-01 | -9.38643E-01 |
| 63 | 6.12226E-01 | -8.83084E-01 | 5.55063E-01 | -9.59825E-01 |
| 64 | 6.35946E-01 | -9.04131E-01 | 5.81616E-01 | -9.80187E-01 |
| 65 | 6.59643E-01 | -9.24564E-01 | 6.08176E-01 | -9.99739E-01 |
| 66 | 6.83330E-01 | -9.44401E-01 | 6.34736E-01 | -1.01850E+00 |
| 67 | 7.07016E-01 | -9.63659E-01 | 6.61290E-01 | -1.03648E+00 |
| 68 | 7.30709E-01 | -9.82358E-01 | 6.87334E-01 | -1.05370E+00 |

POINT NO | XS | YS | XP | YP
---|---|---|---|---
69 | 7.54419E-01 | -1.00052E+00 | 7.14365E-01 | -1.07016E+00
70 | 7.78155E-01 | -1.01816E+00 | 7.40800E-01 | -1.08589E+00
71 | 8.01326E-01 | -1.03530E+00 | 7.67377E-01 | -1.10089E+00
72 | 8.25742E-01 | -1.05196E+00 | 7.93855E-01 | -1.11519E+00
73 | 8.49613E-01 | -1.06817E+00 | 8.20313E-01 | -1.12851E+00
74 | 8.73543E-01 | -1.08394E+00 | 8.46752E-01 | -1.14177E+00
75 | 8.97540E-01 | -1.09931E+00 | 8.73175E-01 | -1.15409E+00
76 | 9.21510E-01 | -1.11429E+00 | 8.99582E-01 | -1.16580E+00
77 | 9.45755E-01 | -1.12891E+00 | 9.25969E-01 | -1.17692E+00
78 | 9.69979E-01 | -1.14321E+00 | 9.52368E-01 | -1.18749E+00
79 | 9.94283E-01 | -1.15721E+00 | 9.78756E-01 | -1.19754E+00
80 | 1.01867E+00 | -1.17097E+00 | 1.00515E+00 | -1.20707E+00

POINT NO | XSEMI | YSEMI
---|---|---
1 | -9.81326E-01 | 1.89458E+00
2 | -9.81510E-01 | 1.89515E+00
3 | -9.81636E-01 | 1.89574E+00
4 | -9.81704E-01 | 1.89634E+00
5 | -9.81712E-01 | 1.89695E+00
6 | -9.81661E-01 | 1.89755E+00
7 | -9.81552E-01 | 1.89815E+00
8 | -9.81385E-01 | 1.89874E+00
9 | -9.81152E-01 | 1.89930E+00
10 | -9.80936E-01 | 1.89984E+00
11 | -9.80559E-01 | 1.90034E+00
12 | -9.80186E-01 | 1.90081E+00
13 | -9.79770E-01 | 1.90123E+00
14 | -9.79316E-01 | 1.90160E+00
15 | -9.78829E-01 | 1.90193E+00
16 | -9.78315E-01 | 1.90219E+00
17 | -9.77778E-01 | 1.90240E+00
18 | -9.77225E-01 | 1.90255E+00
19 | -9.76661E-01 | 1.90264E+00
20 | -9.76094E-01 | 1.90266E+00
21 | -9.75529E-01 | 1.90262E+00
22 | -9.74373E-01 | 1.90252E+00
23 | -9.74316E-01 | 1.90235E+00
24 | -9.73909E-01 | 1.90213E+00
25 | -9.73414E-01 | 1.90184E+00
26 | -9.72950E-01 | 1.90151E+00
27 | -9.72523E-01 | 1.90112E+00
28 | -9.72137E-01 | 1.90068E+00
29 | -9.71797E-01 | 1.90021E+00
30 | -9.71507E-01 | 1.89969E+00
31 | -9.71258E-01 | 1.89915E+00

SECTION NUMBER 11   'Z' =  9.0000
*********************************************

SECTION PROPERTIES

SECTION AREA                              =  3.0841E-01

LOCATION OF CENTROID          XBAR  =  -4.9902E-02
RELATIVE TO STACK AXIS        YBAR  =  -1.9587E-02

SECOND MOMENTS OF AREA        IX    =   2.0457E-01
ABOUT CENTROID                IY    =   5.3017E-02
                              IXY   =  -1.1646E-01

PRINCIPAL SECOND MOMENTS      IPX   =   2.7154E-01 (AT   29.90 DEGREES TO 'X' AXIS)
OF AREA ABOUT CENTROID        IPY   =   2.0508E-03 (AT   29.90 DEGREES TO 'Y' AXIS)

TORSIONAL CONSTANT                  =   5.7311E-04

SECTION COORDINATES

| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 1  | -3.70294E-01 | 1.93415E+00 | -9.80581E-01 | 1.98953E+00 |
| 2  | -3.43252E-01 | 1.92481E+00 | -9.57278E-01 | 1.91864E+00 |
| 3  | -9.16235E-01 | 1.85591E+00 | -9.33970E-01 | 1.84814E+00 |
| 4  | -5.89219E-01 | 1.78746E+00 | -9.10655E-01 | 1.77812E+00 |
| 5  | -3.62219E-01 | 1.71954E+00 | -8.87328E-01 | 1.70850E+00 |
| 6  | -8.35241E-01 | 1.65206E+00 | -8.63996E-01 | 1.63562E+00 |
| 7  | -8.08297E-01 | 1.58516E+00 | -8.40627E-01 | 1.57118E+00 |
| 8  | -7.81352E-01 | 1.51881E+00 | -8.17245E-01 | 1.50332E+00 |
| 9  | -7.54471E-01 | 1.45303E+00 | -7.93837E-01 | 1.43604E+00 |
| 10 | -7.27616E-01 | 1.38785E+00 | -7.70401E-01 | 1.36934E+00 |
| 11 | -7.00901E-01 | 1.32327E+00 | -7.49932E-01 | 1.30334E+00 |
| 12 | -6.74050E-01 | 1.25932E+00 | -7.23427E-01 | 1.23793E+00 |
| 13 | -6.47305E-01 | 1.19600E+00 | -6.99882E-01 | 1.17319E+00 |
| 14 | -6.20629E-01 | 1.13333E+00 | -6.76297E-01 | 1.10910E+00 |
| 15 | -5.94004E-01 | 1.07133E+00 | -6.52665E-01 | 1.04569E+00 |
| 16 | -5.67434E-01 | 1.01000E+00 | -6.28988E-01 | 9.82976E-01 |
| 17 | -5.40921E-01 | 9.43352E-01 | -6.05259E-01 | 9.20959E-01 |
| 18 | -5.14455E-01 | 8.83401E-01 | -5.81473E-01 | 8.59654E-01 |
| 19 | -4.88053E-01 | 8.30152E-01 | -5.57643E-01 | 7.99070E-01 |
| 20 | -4.61734E-01 | 7.71618E-01 | -5.33752E-01 | 7.34214E-01 |
| 21 | -4.35462E-01 | 7.13809E-01 | -5.09903E-01 | 6.80096E-01 |
| 22 | -4.09253E-01 | 6.56728E-01 | -4.85794E-01 | 6.21727E-01 |
| 23 | -3.83111E-01 | 6.00389E-01 | -4.61725E-01 | 5.64114E-01 |
| 24 | -3.57034E-01 | 5.44802E-01 | -4.37593E-01 | 5.07266E-01 |
| 25 | -3.31026E-01 | 4.89959E-01 | -4.13399E-01 | 4.51138E-01 |
| 26 | -3.05035E-01 | 4.35901E-01 | -3.89141E-01 | 3.95889E-01 |
| 27 | -2.79214E-01 | 3.82608E-01 | -3.64820E-01 | 3.41375E-01 |
| 28 | -2.53411E-01 | 3.30097E-01 | -3.40434E-01 | 2.97655E-01 |
| 29 | -2.27677E-01 | 2.79372E-01 | -3.15984E-01 | 2.34737E-01 |
| 30 | -2.02012E-01 | 2.27446E-01 | -2.91470E-01 | 1.82622E-01 |
| 31 | -1.76415E-01 | 1.77325E-01 | -2.66891E-01 | 1.31321E-01 |
| 32 | -1.50844E-01 | 1.28017E-01 | -2.42246E-01 | 8.03400E-02 |
| 33 | -1.25420E-01 | 7.95301E-02 | -2.17536E-01 | 3.11863E-02 |
| 34 | -1.00022E-01 | 3.13725E-02 | -1.92761E-01 | -1.76346E-02 |
| 35 | -7.46374E-02 | -1.49516E-02 | -1.67919E-01 | -5.56175E-02 |

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| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 36 | -4.34155E-02 | -6.09341E-02 | -1.43010E-01 | -1.12752E-01 |
| 37 | -2.42081E-02 | -1.06065E-01 | -1.18035E-01 | -1.59031E-01 |
| 38 | 3.39103E-04 | -1.50335E-01 | -9.29336E-02 | -2.04452E-01 |
| 39 | 2.60265E-02 | -1.93738E-01 | -6.78857E-02 | -2.49012E-01 |
| 40 | 5.15556E-02 | -2.36270E-01 | -4.27115E-02 | -2.92698E-01 |
| 41 | 7.60278E-02 | -2.77921E-01 | -1.74713E-02 | -3.35504E-01 |
| 42 | 1.00945E-01 | -3.18684E-01 | 7.83479E-03 | -3.77424E-01 |
| 43 | 1.25338E-01 | -3.58554E-01 | 3.32072E-02 | -4.18455E-01 |
| 44 | 1.50620E-01 | -3.97527E-01 | 5.86450E-02 | -4.58588E-01 |
| 45 | 1.75332E-01 | -4.35596E-01 | 8.41479E-02 | -4.97817E-01 |
| 46 | 2.00035E-01 | -4.72757E-01 | 1.09715E-01 | -5.36137E-01 |
| 47 | 2.24735E-01 | -5.09009E-01 | 1.35351E-01 | -5.73545E-01 |
| 48 | 2.49368E-01 | -5.44353E-01 | 1.61059E-01 | -6.10026E-01 |
| 49 | 2.73919E-01 | -5.78795E-01 | 1.86844E-01 | -6.45574E-01 |
| 50 | 2.98409E-01 | -6.12337E-01 | 2.12708E-01 | -6.80183E-01 |
| 51 | 3.22836E-01 | -6.44985E-01 | 2.38653E-01 | -7.13847E-01 |
| 52 | 3.47139E-01 | -6.76745E-01 | 2.64679E-01 | -7.45559E-01 |
| 53 | 3.71437E-01 | -7.07625E-01 | 2.90784E-01 | -7.78310E-01 |
| 54 | 3.95731E-01 | -7.37635E-01 | 3.16967E-01 | -8.09124E-01 |
| 55 | 4.19901E-01 | -7.66784E-01 | 3.43224E-01 | -8.39973E-01 |
| 56 | 4.44010E-01 | -7.95084E-01 | 3.69551E-01 | -8.67860E-01 |
| 57 | 4.68057E-01 | -8.22549E-01 | 3.95943E-01 | -8.95813E-01 |
| 58 | 4.92047E-01 | -8.49192E-01 | 4.22395E-01 | -9.22810E-01 |
| 59 | 5.15943E-01 | -8.75032E-01 | 4.48900E-01 | -9.48864E-01 |
| 60 | 5.39368E-01 | -9.00084E-01 | 4.75451E-01 | -9.73985E-01 |
| 61 | 5.63706E-01 | -9.24368E-01 | 5.02039E-01 | -9.98181E-01 |
| 62 | 5.87501E-01 | -9.47904E-01 | 5.28657E-01 | -1.02146E+00 |
| 63 | 6.11259E-01 | -9.70715E-01 | 5.55294E-01 | -1.04384E+00 |
| 64 | 5.34984E-01 | -9.92822E-01 | 5.81941E-01 | -1.06534E+00 |
| 65 | 6.58694E-01 | -1.01425E+00 | 6.08586E-01 | -1.08596E+00 |
| 66 | 6.82372E-01 | -1.03500E+00 | 6.35221E-01 | -1.10574E+00 |
| 67 | 7.06050E-01 | -1.05511E+00 | 6.61839E-01 | -1.12468E+00 |
| 68 | 7.29750E-01 | -1.07459E+00 | 6.88438E-01 | -1.14279E+00 |
| 69 | 7.53483E-01 | -1.09345E+00 | 7.15015E-01 | -1.15010E+00 |
| 70 | 7.77242E-01 | -1.11172E+00 | 7.41572E-01 | -1.17661E+00 |
| 71 | 8.01048E-01 | -1.12941E+00 | 7.68106E-01 | -1.19234E+00 |
| 72 | 8.24914E-01 | -1.14656E+00 | 7.94620E-01 | -1.20730E+00 |
| 73 | 8.48852E-01 | -1.16317E+00 | 8.21115E-01 | -1.22153E+00 |
| 74 | 8.72871E-01 | -1.17928E+00 | 8.47593E-01 | -1.23503E+00 |
| 75 | 8.96979E-01 | -1.19490E+00 | 8.74058E-01 | -1.24783E+00 |
| 76 | 9.21134E-01 | -1.21006E+00 | 9.00513E-01 | -1.25997E+00 |
| 77 | 9.45492E-01 | -1.22479E+00 | 9.26966E-01 | -1.27146E+00 |
| 78 | 9.69908E-01 | -1.23912E+00 | 9.53421E-01 | -1.28233E+00 |
| 79 | 9.94435E-01 | -1.25306E+00 | 9.79885E-01 | -1.29263E+00 |
| 80 | 1.01907E+00 | -1.26660E+00 | 1.00637E+00 | -1.30235E+00 |

| POINT NO | XSEMI | YSEMI |
|---|---|---|
| 1 | -3.80531E-01 | 1.93959E+00 |
| 2 | -3.80757E-01 | 1.93018E+00 |
| 3 | -3.80875E-01 | 1.93078E+00 |
| 4 | -3.80934E-01 | 1.99140E+00 |
| 5 | -3.80932E-01 | 1.93202E+00 |
| 6 | -3.80870E-01 | 1.93264E+00 |
| 7 | -3.80749E-01 | 1.93325E+00 |
| 8 | -3.80569E-01 | 1.93385E+00 |
| 9 | -3.80334E-01 | 1.93442E+00 |

| POINT NO | XSEMI | YSEMI |
| --- | --- | --- |
| 10 | -3.80044E-01 | 1.93497E+00 |
| 11 | -3.79704E-01 | 1.93548E+00 |
| 12 | -3.79318E-01 | 1.93595E+00 |
| 13 | -3.78858E-01 | 1.93638E+00 |
| 14 | -3.78421E-01 | 1.93676E+00 |
| 15 | -3.77922E-01 | 1.93708E+00 |
| 16 | -3.77335E-01 | 1.99735E+00 |
| 17 | -3.76846E-01 | 1.93756E+00 |
| 18 | -3.76282E-01 | 1.93770E+00 |
| 19 | -3.75709E-01 | 1.93779E+00 |
| 20 | -3.75133E-01 | 1.93780E+00 |
| 21 | -3.74560E-01 | 1.93775E+00 |
| 22 | -3.73937E-01 | 1.93764E+00 |
| 23 | -3.73450E-01 | 1.93747E+00 |
| 24 | -3.72924E-01 | 1.93723E+00 |
| 25 | -3.72426E-01 | 1.93693E+00 |
| 26 | -3.71961E-01 | 1.93658E+00 |
| 27 | -3.71535E-01 | 1.93618E+00 |
| 28 | -3.71151E-01 | 1.93573E+00 |
| 29 | -3.70814E-01 | 1.93524E+00 |
| 30 | -3.70527E-01 | 1.99471E+00 |
| 31 | -3.70234E-01 | 1.93415E+00 |

# SPLITTER VANE

## STREAMSURFACE GEOMETRY ON STREAMLINE NUMBER 1

| POINT NUMBER | M E A N L I N E   D A T A | | | | SURFACE COORDINATE DATA | | | |
|---|---|---|---|---|---|---|---|---|
| | X | Y | ANGLE | THICKNESS | XS | YS | XP | YP |
| 1 | .50228 | -.76445 | -47.592 | .00460 | .50398 | -.76289 | .50058 | -.76600 |
| 2 | .50850 | -.77119 | -47.045 | .00714 | .51111 | -.76875 | .50588 | -.77362 |
| 3 | .52097 | -.78437 | -46.155 | .01195 | .52528 | -.78023 | .51666 | -.78851 |
| 4 | .53345 | -.79720 | -45.402 | .01639 | .53929 | -.79144 | .52762 | -.80295 |
| 5 | .54593 | -.80967 | -44.581 | .02047 | .55312 | -.80238 | .53875 | -.81696 |
| 6 | .55841 | -.82179 | -43.750 | .02421 | .56678 | -.81305 | .55004 | -.83054 |
| 7 | .57089 | -.83356 | -42.892 | .02762 | .58029 | -.82345 | .56149 | -.84368 |
| 8 | .58337 | -.84498 | -42.014 | .03070 | .59364 | -.83357 | .57309 | -.85638 |
| 9 | .59584 | -.85605 | -41.115 | .03347 | .60685 | -.84344 | .58484 | -.86865 |
| 10 | .60832 | -.86676 | -40.195 | .03594 | .61992 | -.85304 | .59673 | -.88049 |
| 11 | .62080 | -.87713 | -39.256 | .03812 | .63286 | -.86237 | .60874 | -.89189 |
| 12 | .63328 | -.88716 | -38.298 | .04002 | .64568 | -.87146 | .62088 | -.90286 |
| 13 | .64576 | -.89684 | -37.324 | .04165 | .65838 | -.88028 | .63313 | -.91340 |
| 14 | .65824 | -.90619 | -36.333 | .04301 | .67098 | -.88886 | .64550 | -.92351 |
| 15 | .67072 | -.91520 | -35.328 | .04413 | .68347 | -.89720 | .65796 | -.93320 |
| 16 | .68319 | -.92388 | -34.311 | .04500 | .69588 | -.90529 | .67051 | -.94246 |
| 17 | .69567 | -.93223 | -33.283 | .04564 | .70819 | -.91316 | .68315 | -.95131 |
| 18 | .70315 | -.94026 | -32.247 | .04605 | .72044 | -.92079 | .69587 | -.95974 |
| 19 | .72063 | -.94798 | -31.205 | .04624 | .73261 | -.92820 | .70865 | -.96775 |
| 20 | .73311 | -.95538 | -30.159 | .04622 | .74472 | -.93540 | .72150 | -.97536 |
| 21 | .74559 | -.96248 | -29.112 | .04600 | .75678 | -.94239 | .73440 | -.98257 |
| 22 | .75807 | -.96928 | -28.067 | .04557 | .76879 | -.94918 | .74734 | -.98939 |
| 23 | .77054 | -.97579 | -27.026 | .04496 | .78076 | -.95577 | .76033 | -.99582 |
| 24 | .78302 | -.98202 | -25.993 | .04416 | .79270 | -.96217 | .77335 | -1.00186 |
| 25 | .79550 | -.98796 | -24.971 | .04317 | .80461 | -.96839 | .78639 | -1.00753 |
| 26 | .80798 | -.99364 | -23.963 | .04201 | .81651 | -.97445 | .79945 | -1.01284 |
| 27 | .82046 | -.99906 | -22.973 | .04068 | .82840 | -.98033 | .81252 | -1.01778 |
| 28 | .83294 | -1.00422 | -22.002 | .03917 | .84027 | -.98606 | .82560 | -1.02238 |
| 29 | .84541 | -1.00915 | -21.056 | .03750 | .85215 | -.99165 | .83868 | -1.02664 |
| 30 | .85789 | -1.01383 | -20.137 | .03566 | .86403 | -.99709 | .85175 | -1.03053 |
| 31 | .87037 | -1.01830 | -19.248 | .03367 | .87592 | -1.00241 | .86482 | -1.03419 |
| 32 | .88285 | -1.02255 | -18.393 | .03152 | .88782 | -1.00760 | .87788 | -1.03750 |
| 33 | .89533 | -1.02660 | -17.575 | .02921 | .89974 | -1.01268 | .89092 | -1.04052 |
| 34 | .90781 | -1.03046 | -16.797 | .02674 | .91167 | -1.01766 | .90394 | -1.04326 |
| 35 | .92029 | -1.03414 | -16.062 | .02413 | .92362 | -1.02255 | .91695 | -1.04573 |
| 36 | .93276 | -1.03765 | -15.373 | .02137 | .93560 | -1.02735 | .92993 | -1.04795 |
| 37 | .94524 | -1.04101 | -14.735 | .01845 | .94759 | -1.03208 | .94290 | -1.04993 |
| 38 | .95772 | -1.04422 | -14.142 | .01539 | .95960 | -1.03675 | .95584 | -1.05168 |
| 39 | .97020 | -1.04730 | -13.625 | .01219 | .97163 | -1.04138 | .96876 | -1.05322 |
| 40 | .98268 | -1.05027 | -13.089 | .00883 | .98368 | -1.04596 | .98168 | -1.05457 |
| 41 | .99516 | -1.05313 | -12.899 | .00533 | .99575 | -1.05053 | .99456 | -1.05573 |
| 42 | .99772 | -1.05372 | -12.947 | .00460 | .99824 | -1.05148 | .99721 | -1.05596 |

SPLITTER VANE

STREAMSURFACE GEOMETRY ON STREAMLINE NUMBER 2

| POINT NUMBER | MEANLINE DATA | | | | SURFACE COORDINATE DATA | | | |
|---|---|---|---|---|---|---|---|---|
| | X | Y | ANGLE | THICKNESS | XS | YS | XP | YP |
| 1 | .50232 | -.78289 | -48.422 | .00467 | .50406 | -.78134 | .50057 | -.78444 |
| 2 | .50844 | -.78972 | -47.895 | .00702 | .51104 | -.78737 | .50583 | -.79207 |
| 3 | .52091 | -.80330 | -47.017 | .01152 | .52512 | -.79937 | .51670 | -.80722 |
| 4 | .53338 | -.81652 | -46.281 | .01567 | .53905 | -.81110 | .52772 | -.82193 |
| 5 | .54586 | -.82938 | -45.476 | .01949 | .55281 | -.82255 | .53891 | -.83621 |
| 6 | .55833 | -.84189 | -44.662 | .02299 | .56641 | -.83371 | .55025 | -.85006 |
| 7 | .57081 | -.85403 | -43.822 | .02617 | .57987 | -.84459 | .56174 | -.86348 |
| 8 | .58328 | -.86583 | -42.961 | .02905 | .59318 | -.85520 | .57338 | -.87646 |
| 9 | .59575 | -.87727 | -42.079 | .03164 | .60636 | -.86553 | .58515 | -.88901 |
| 10 | .60823 | -.88835 | -41.177 | .03394 | .61940 | -.87558 | .59706 | -.90113 |
| 11 | .62070 | -.89909 | -40.255 | .03597 | .63232 | -.88537 | .60908 | -.91282 |
| 12 | .63318 | -.90948 | -39.314 | .03774 | .64513 | -.89488 | .62122 | -.92408 |
| 13 | .64565 | -.91952 | -38.356 | .03925 | .65783 | -.90413 | .63347 | -.93491 |
| 14 | .65812 | -.92922 | -37.383 | .04052 | .67042 | -.91313 | .64582 | -.94532 |
| 15 | .67060 | -.93859 | -36.394 | .04155 | .68292 | -.92186 | .65827 | -.95531 |
| 16 | .68307 | -.94761 | -35.393 | .04235 | .69534 | -.93035 | .67081 | -.96488 |
| 17 | .69555 | -.95631 | -34.381 | .04294 | .70767 | -.93859 | .68342 | -.97403 |
| 18 | .70802 | -.96469 | -33.360 | .04331 | .71993 | -.94660 | .69611 | -.98277 |
| 19 | .72049 | -.97274 | -32.332 | .04348 | .73212 | -.95437 | .70887 | -.99111 |
| 20 | .73297 | -.98048 | -31.300 | .04345 | .74426 | -.96191 | .72168 | -.99904 |
| 21 | .74544 | -.98791 | -30.267 | .04323 | .75634 | -.96924 | .73455 | -1.00658 |
| 22 | .75792 | -.99504 | -29.234 | .04283 | .76837 | -.97635 | .74746 | -1.01373 |
| 23 | .77039 | -1.00187 | -28.205 | .04225 | .78037 | -.98326 | .76041 | -1.02049 |
| 24 | .78286 | -1.00842 | -27.183 | .04149 | .79234 | -.98997 | .77339 | -1.02688 |
| 25 | .79534 | -1.01469 | -26.171 | .04057 | .80428 | -.99648 | .78639 | -1.03289 |
| 26 | .80781 | -1.02068 | -25.172 | .03948 | .81621 | -1.00282 | .79942 | -1.03855 |
| 27 | .82029 | -1.02642 | -24.189 | .03823 | .82812 | -1.00898 | .81245 | -1.04385 |
| 28 | .83276 | -1.03189 | -23.226 | .03682 | .84002 | -1.01497 | .82550 | -1.04881 |
| 29 | .84523 | -1.03713 | -22.286 | .03526 | .85192 | -1.02081 | .83855 | -1.05344 |
| 30 | .85771 | -1.04212 | -21.372 | .03355 | .86382 | -1.02650 | .85159 | -1.05774 |
| 31 | .87018 | -1.04689 | -20.488 | .03169 | .87573 | -1.03205 | .86463 | -1.06174 |
| 32 | .88266 | -1.05145 | -19.637 | .02969 | .88764 | -1.03747 | .87767 | -1.06543 |
| 33 | .89513 | -1.05580 | -18.822 | .02754 | .89957 | -1.04276 | .89069 | -1.06883 |
| 34 | .90760 | -1.05996 | -18.047 | .02525 | .91152 | -1.04795 | .90369 | -1.07196 |
| 35 | .92008 | -1.06393 | -17.314 | .02283 | .92347 | -1.05303 | .91668 | -1.07483 |
| 36 | .93255 | -1.06774 | -16.627 | .02026 | .93545 | -1.05803 | .92965 | -1.07744 |
| 37 | .94503 | -1.07139 | -15.990 | .01756 | .94744 | -1.06295 | .94261 | -1.07982 |
| 38 | .95750 | -1.07489 | -15.398 | .01472 | .95945 | -1.06779 | .95555 | -1.08198 |
| 39 | .96997 | -1.07826 | -14.881 | .01175 | .97148 | -1.07259 | .96846 | -1.08394 |
| 40 | .98245 | -1.08152 | -14.345 | .00864 | .98352 | -1.07733 | .98138 | -1.08570 |
| 41 | .99492 | -1.08467 | -14.154 | .00540 | .99558 | -1.08205 | .99426 | -1.08729 |
| 42 | .99768 | -1.08537 | -14.205 | .00467 | .99826 | -1.08310 | .99711 | -1.08763 |

SPLITTER VANE

STREAMSURFACE GEOMETRY ON STREAMLINE NUMBER 3

| POINT NUMBER | MEANLINE DATA | | | | SURFACE COORDINATE DATA | | | |
|---|---|---|---|---|---|---|---|---|
| | X | Y | ANGLE | THICKNESS | XS | YS | XP | YP |
| 1 | .50235 | -.80058 | -49.207 | .00473 | .50414 | -.79903 | .50056 | -.80213 |
| 2 | .50838 | -.80750 | -48.696 | .00689 | .51097 | -.80523 | .50579 | -.80978 |
| 3 | .52085 | -.82146 | -47.835 | .01110 | .52496 | -.81774 | .51674 | -.82519 |
| 4 | .53332 | -.83507 | -47.115 | .01498 | .53881 | -.82997 | .52783 | -.84016 |
| 5 | .54579 | -.84831 | -46.328 | .01855 | .55249 | -.84190 | .53908 | -.85471 |
| 6 | .55826 | -.86119 | -45.531 | .02181 | .56604 | -.85355 | .55048 | -.86883 |
| 7 | .57073 | -.87371 | -44.708 | .02478 | .57944 | -.86491 | .56201 | -.88252 |
| 8 | .58320 | -.88588 | -43.866 | .02746 | .59271 | -.87598 | .57368 | -.89578 |
| 9 | .59567 | -.89768 | -43.002 | .02987 | .60585 | -.88676 | .58548 | -.90861 |
| 10 | .60814 | -.90914 | -42.118 | .03201 | .61887 | -.89726 | .59740 | -.92101 |
| 11 | .62061 | -.92023 | -41.214 | .03390 | .63177 | -.90748 | .60944 | -.93298 |
| 12 | .63308 | -.93098 | -40.292 | .03554 | .64457 | -.91743 | .62158 | -.94454 |
| 13 | .64554 | -.94138 | -39.352 | .03694 | .65726 | -.92710 | .63383 | -.95566 |
| 14 | .65801 | -.95143 | -38.397 | .03812 | .66985 | -.93650 | .64618 | -.96637 |
| 15 | .67048 | -.96114 | -37.426 | .03907 | .68236 | -.94563 | .65861 | -.97666 |
| 16 | .68295 | -.97052 | -36.443 | .03981 | .69478 | -.95451 | .67113 | -.98653 |
| 17 | .69542 | -.97956 | -35.448 | .04035 | .70712 | -.96313 | .68372 | -.99600 |
| 18 | .70789 | -.98828 | -34.444 | .04069 | .71940 | -.97150 | .69639 | -1.00505 |
| 19 | .72036 | -.99667 | -33.433 | .04084 | .73161 | -.97963 | .70911 | -1.01371 |
| 20 | .73283 | -1.00474 | -32.417 | .04081 | .74377 | -.98752 | .72189 | -1.02197 |
| 21 | .74530 | -1.01251 | -31.399 | .04059 | .75588 | -.99518 | .73473 | -1.02983 |
| 22 | .75777 | -1.01997 | -30.381 | .04021 | .76794 | -1.00262 | .74760 | -1.03731 |
| 23 | .77024 | -1.02713 | -29.366 | .03966 | .77997 | -1.00985 | .76052 | -1.04441 |
| 24 | .78271 | -1.03400 | -28.357 | .03895 | .79196 | -1.01686 | .77340 | -1.05114 |
| 25 | .79518 | -1.04059 | -27.357 | .03809 | .80393 | -1.02368 | .78643 | -1.05751 |
| 26 | .80765 | -1.04691 | -26.370 | .03707 | .81588 | -1.03030 | .79942 | -1.06352 |
| 27 | .82012 | -1.05296 | -25.398 | .03590 | .82782 | -1.03674 | .81242 | -1.06918 |
| 28 | .83259 | -1.05875 | -24.445 | .03459 | .83975 | -1.04301 | .82543 | -1.07450 |
| 29 | .84506 | -1.06430 | -23.513 | .03314 | .85167 | -1.04911 | .83845 | -1.07949 |
| 30 | .85753 | -1.06961 | -22.608 | .03154 | .86359 | -1.05505 | .85147 | -1.08417 |
| 31 | .87000 | -1.07469 | -21.731 | .02982 | .87552 | -1.06084 | .86448 | -1.08854 |
| 32 | .88247 | -1.07955 | -20.886 | .02795 | .88745 | -1.06649 | .87749 | -1.09261 |
| 33 | .89494 | -1.08421 | -20.077 | .02596 | .89939 | -1.07202 | .89048 | -1.09640 |
| 34 | .90741 | -1.08867 | -19.306 | .02384 | .91135 | -1.07742 | .90347 | -1.09992 |
| 35 | .91988 | -1.09295 | -18.578 | .02159 | .92332 | -1.08272 | .91644 | -1.10318 |
| 36 | .93235 | -1.09706 | -17.894 | .01921 | .93530 | -1.08792 | .92940 | -1.10620 |
| 37 | .94482 | -1.10101 | -17.259 | .01671 | .94730 | -1.09303 | .94234 | -1.10898 |
| 38 | .95729 | -1.10481 | -16.670 | .01408 | .95931 | -1.09807 | .95527 | -1.11155 |
| 39 | .96976 | -1.10848 | -16.155 | .01133 | .97133 | -1.10304 | .96818 | -1.11392 |
| 40 | .98223 | -1.11203 | -15.621 | .00845 | .98336 | -1.10796 | .98109 | -1.11610 |
| 41 | .99470 | -1.11548 | -15.429 | .00546 | .99542 | -1.11285 | .99397 | -1.11811 |
| 42 | .99765 | -1.11630 | -15.482 | .00473 | .99828 | -1.11402 | .99702 | -1.11858 |

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# SPLITTER VANE

## STREAMSURFACE GEOMETRY ON STREAMLINE NUMBER 4

| POINT NUMBER | M E A N L I N E   D A T A | | | | SURFACE COORDINATE DATA | | | |
|---|---|---|---|---|---|---|---|---|
| | X | Y | ANGLE | THICKNESS | XS | YS | XP | YP |
| 1  | .50238 | -.81649 | -49.917 | .00479 | .50421 | -.81495 | .50055 | -.81803 |
| 2  | .50832 | -.82349 | -49.422 | .00678 | .51089 | -.82128 | .50574 | -.82569 |
| 3  | .52078 | -.83781 | -48.577 | .01071 | .52480 | -.83426 | .51677 | -.84135 |
| 4  | .53325 | -.85177 | -47.875 | .01434 | .53857 | -.84696 | .52793 | -.85658 |
| 5  | .54571 | -.86537 | -47.106 | .01768 | .55219 | -.85935 | .53924 | -.87139 |
| 6  | .55818 | -.87861 | -46.327 | .02073 | .56568 | -.87145 | .55068 | -.88576 |
| 7  | .57065 | -.89148 | -45.523 | .02351 | .57903 | -.88325 | .56226 | -.89972 |
| 8  | .58311 | -.90400 | -44.699 | .02601 | .59226 | -.89475 | .57396 | -.91324 |
| 9  | .59558 | -.91615 | -43.855 | .02826 | .60537 | -.90597 | .58579 | -.92634 |
| 10 | .60804 | -.92795 | -42.990 | .03026 | .61836 | -.91689 | .59773 | -.93902 |
| 11 | .62051 | -.93940 | -42.107 | .03202 | .63124 | -.92752 | .60977 | -.95127 |
| 12 | .63298 | -.95049 | -41.204 | .03355 | .64403 | -.93787 | .62193 | -.96311 |
| 13 | .64544 | -.96123 | -40.285 | .03485 | .65671 | -.94793 | .63417 | -.97452 |
| 14 | .65791 | -.97162 | -39.349 | .03595 | .66930 | -.95772 | .64651 | -.98552 |
| 15 | .67037 | -.98167 | -38.399 | .03683 | .68181 | -.96724 | .65893 | -.99610 |
| 16 | .68284 | -.99138 | -37.435 | .03752 | .69424 | -.97649 | .67144 | -1.00628 |
| 17 | .69530 | -1.00076 | -36.461 | .03801 | .70660 | -.98547 | .68401 | -1.01605 |
| 18 | .70777 | -1.00981 | -35.477 | .03833 | .71889 | -.99420 | .69665 | -1.02541 |
| 19 | .72024 | -1.01853 | -34.485 | .03846 | .73112 | -1.00268 | .70935 | -1.03438 |
| 20 | .73270 | -1.02693 | -33.489 | .03842 | .74330 | -1.01091 | .72210 | -1.04295 |
| 21 | .74517 | -1.03502 | -32.488 | .03822 | .75543 | -1.01891 | .73490 | -1.05114 |
| 22 | .75763 | -1.04281 | -31.488 | .03786 | .76752 | -1.02667 | .74775 | -1.05895 |
| 23 | .77010 | -1.05030 | -30.490 | .03734 | .77957 | -1.03421 | .76063 | -1.06639 |
| 24 | .78256 | -1.05749 | -29.498 | .03667 | .79159 | -1.04153 | .77354 | -1.07345 |
| 25 | .79503 | -1.06440 | -28.514 | .03586 | .80359 | -1.04865 | .78647 | -1.08016 |
| 26 | .80750 | -1.07104 | -27.542 | .03491 | .81557 | -1.05557 | .79943 | -1.08652 |
| 27 | .81996 | -1.07741 | -26.584 | .03381 | .82753 | -1.06229 | .81240 | -1.09253 |
| 28 | .83243 | -1.08352 | -25.644 | .03259 | .83948 | -1.06883 | .82538 | -1.09821 |
| 29 | .84489 | -1.08938 | -24.726 | .03123 | .85143 | -1.07520 | .83836 | -1.10357 |
| 30 | .85736 | -1.09500 | -23.832 | .02975 | .86337 | -1.08140 | .85135 | -1.10861 |
| 31 | .86983 | -1.10040 | -22.965 | .02814 | .87531 | -1.08744 | .86434 | -1.11335 |
| 32 | .88229 | -1.10557 | -22.131 | .02640 | .88726 | -1.09334 | .87732 | -1.11780 |
| 33 | .89476 | -1.11054 | -21.330 | .02455 | .89922 | -1.09911 | .89029 | -1.12197 |
| 34 | .90722 | -1.11531 | -20.568 | .02257 | .91119 | -1.10475 | .90326 | -1.12588 |
| 35 | .91969 | -1.11990 | -19.847 | .02048 | .92316 | -1.11027 | .91621 | -1.12953 |
| 36 | .93215 | -1.12432 | -19.169 | .01827 | .93515 | -1.11569 | .92916 | -1.13294 |
| 37 | .94462 | -1.12857 | -18.540 | .01594 | .94715 | -1.12101 | .94209 | -1.13613 |
| 38 | .95709 | -1.13268 | -17.956 | .01350 | .95917 | -1.12626 | .95500 | -1.13910 |
| 39 | .96955 | -1.13666 | -17.445 | .01095 | .97119 | -1.13143 | .96791 | -1.14188 |
| 40 | .98202 | -1.14051 | -16.916 | .00828 | .98322 | -1.13655 | .98081 | -1.14448 |
| 41 | .99448 | -1.14427 | -16.723 | .00550 | .99528 | -1.14163 | .99369 | -1.14690 |
| 42 | .99762 | -1.14521 | -16.779 | .00479 | .99831 | -1.14232 | .99693 | -1.14750 |

# SPLITTER VANE

## STREAMSURFACE GEOMETRY ON STREAMLINE NUMBER 5

| FCINT NUMBER | MEANLINE DATA | | | | SURFACE COORDINATE DATA | | | |
|---|---|---|---|---|---|---|---|---|
| | X | Y | ANGLE | THICKNESS | XS | YS | XP | YP |
| 1 | .50241 | -.83133 | -50.566 | .00484 | .50427 | -.82979 | .50054 | -.83287 |
| 2 | .50926 | -.83839 | -50.085 | .00668 | .51083 | -.83625 | .50570 | -.84054 |
| 3 | .52073 | -.85306 | -49.257 | .01038 | .52466 | -.84967 | .51680 | -.85644 |
| 4 | .53319 | -.86736 | -48.571 | .01379 | .53836 | -.86279 | .52802 | -.87192 |
| 5 | .54565 | -.88129 | -47.819 | .01692 | .55192 | -.87561 | .53938 | -.88697 |
| 6 | .55811 | -.89486 | -47.057 | .01978 | .56535 | -.88813 | .55087 | -.90160 |
| 7 | .57058 | -.90807 | -46.271 | .02238 | .57866 | -.90034 | .56249 | -.91561 |
| 8 | .58304 | -.92092 | -45.466 | .02473 | .59185 | -.91225 | .57422 | -.92959 |
| 9 | .59550 | -.93341 | -44.639 | .02684 | .60493 | -.92386 | .58607 | -.94296 |
| 10 | .60796 | -.94553 | -43.794 | .02871 | .61790 | -.93517 | .59803 | -.95590 |
| 11 | .62043 | -.95730 | -42.929 | .03036 | .63076 | -.94619 | .61009 | -.96842 |
| 12 | .63289 | -.96872 | -42.046 | .03179 | .64353 | -.95692 | .62224 | -.98052 |
| 13 | .64535 | -.97978 | -41.146 | .03301 | .65621 | -.96736 | .63449 | -.99221 |
| 14 | .65781 | -.99050 | -40.230 | .03403 | .66880 | -.97751 | .64682 | -1.00349 |
| 15 | .67028 | -1.00087 | -39.299 | .03485 | .68131 | -.98739 | .65924 | -1.01436 |
| 16 | .68274 | -1.01090 | -38.355 | .03549 | .69375 | -.99698 | .67173 | -1.02482 |
| 17 | .69520 | -1.02060 | -37.399 | .03595 | .70612 | -1.00632 | .68428 | -1.03488 |
| 18 | .70766 | -1.02996 | -36.434 | .03624 | .71842 | -1.01538 | .69690 | -1.04454 |
| 19 | .72012 | -1.03900 | -35.461 | .03636 | .73067 | -1.02419 | .70958 | -1.05380 |
| 20 | .73259 | -1.04771 | -34.483 | .03632 | .74287 | -1.03275 | .72231 | -1.06268 |
| 21 | .74505 | -1.05612 | -33.501 | .03612 | .75502 | -1.04106 | .73508 | -1.07118 |
| 22 | .75751 | -1.06421 | -32.519 | .03578 | .76713 | -1.04913 | .74789 | -1.07930 |
| 23 | .76997 | -1.07201 | -31.539 | .03529 | .77920 | -1.05697 | .76074 | -1.08705 |
| 24 | .78244 | -1.07951 | -30.563 | .03466 | .79125 | -1.06459 | .77362 | -1.09444 |
| 25 | .79490 | -1.08673 | -29.596 | .03390 | .80327 | -1.07199 | .78653 | -1.10147 |
| 26 | .80736 | -1.09367 | -28.639 | .03300 | .81527 | -1.07919 | .79945 | -1.10816 |
| 27 | .81982 | -1.10035 | -27.696 | .03198 | .82726 | -1.08619 | .81239 | -1.11450 |
| 28 | .83229 | -1.10676 | -26.770 | .03083 | .83923 | -1.09300 | .82534 | -1.12052 |
| 29 | .84475 | -1.11292 | -25.864 | .02956 | .85120 | -1.09963 | .83830 | -1.12622 |
| 30 | .85721 | -1.11885 | -24.982 | .02817 | .86316 | -1.10608 | .85126 | -1.13161 |
| 31 | .86967 | -1.12454 | -24.128 | .02666 | .87512 | -1.11238 | .86422 | -1.13671 |
| 32 | .88214 | -1.13001 | -23.303 | .02504 | .88709 | -1.11852 | .87718 | -1.14151 |
| 33 | .89460 | -1.13528 | -22.513 | .02330 | .89906 | -1.12452 | .89014 | -1.14604 |
| 34 | .90706 | -1.14035 | -21.759 | .02146 | .91104 | -1.13038 | .90308 | -1.15031 |
| 35 | .91952 | -1.14523 | -21.046 | .01950 | .92303 | -1.13613 | .91602 | -1.15433 |
| 36 | .93199 | -1.14994 | -20.375 | .01744 | .93502 | -1.14177 | .92895 | -1.15812 |
| 37 | .94445 | -1.15449 | -19.753 | .01527 | .94703 | -1.14731 | .94187 | -1.16168 |
| 38 | .95691 | -1.15890 | -19.175 | .01299 | .95904 | -1.15276 | .95478 | -1.16504 |
| 39 | .96937 | -1.16317 | -18.669 | .01061 | .97107 | -1.15814 | .96767 | -1.16820 |
| 40 | .98184 | -1.16732 | -18.144 | .00813 | .98310 | -1.16346 | .98057 | -1.17118 |
| 41 | .99430 | -1.17136 | -17.952 | .00554 | .99515 | -1.16873 | .99344 | -1.17400 |
| 42 | .99759 | -1.17243 | -18.009 | .00484 | .99834 | -1.17013 | .99685 | -1.17473 |

# SPLITTER VANE

## STREAMSURFACE GEOMETRY ON STREAMLINE NUMBER 6

| POINT NUMBER | MEANLINE DATA | | | | SURFACE COORDINATE DATA | | | |
|---|---|---|---|---|---|---|---|---|
| | X | Y | ANGLE | THICKNESS | XS | YS | XP | YP |
| 1 | .50243 | -.84623 | -51.179 | .00488 | .50433 | -.84470 | .50053 | -.84776 |
| 2 | .50823 | -.85337 | -50.711 | .00660 | .51078 | -.85128 | .50567 | -.85546 |
| 3 | .52069 | -.86836 | -49.897 | .01009 | .52454 | -.86511 | .51683 | -.87161 |
| 4 | .53315 | -.88299 | -49.225 | .01330 | .53818 | -.87865 | .52811 | -.88733 |
| 5 | .54561 | -.89725 | -48.486 | .01625 | .55169 | -.89186 | .53952 | -.90264 |
| 6 | .55807 | -.91114 | -47.739 | .01894 | .56508 | -.90477 | .55106 | -.91751 |
| 7 | .57053 | -.92467 | -46.968 | .02139 | .57834 | -.91737 | .56271 | -.93197 |
| 8 | .58298 | -.93784 | -46.178 | .02361 | .59150 | -.92967 | .57447 | -.94601 |
| 9 | .59544 | -.95064 | -45.367 | .02559 | .60455 | -.94165 | .58634 | -.95963 |
| 10 | .60790 | -.96308 | -44.537 | .02735 | .61749 | -.95333 | .59831 | -.97283 |
| 11 | .62036 | -.97516 | -43.688 | .02890 | .63034 | -.96471 | .61038 | -.98561 |
| 12 | .63282 | -.98688 | -42.820 | .03024 | .64310 | -.97579 | .62255 | -.99797 |
| 13 | .64528 | -.99825 | -41.936 | .03138 | .65577 | -.98658 | .63480 | -1.00993 |
| 14 | .65774 | -1.00927 | -41.036 | .03234 | .66836 | -.99707 | .64713 | -1.02147 |
| 15 | .67020 | -1.01994 | -40.121 | .03311 | .68087 | -1.00728 | .65953 | -1.03260 |
| 16 | .68266 | -1.03027 | -39.193 | .03371 | .69331 | -1.01721 | .67201 | -1.04333 |
| 17 | .69512 | -1.04026 | -38.253 | .03414 | .70569 | -1.02686 | .68455 | -1.05367 |
| 18 | .70758 | -1.04992 | -37.304 | .03440 | .71800 | -1.03624 | .69716 | -1.06360 |
| 19 | .72004 | -1.05925 | -36.346 | .03451 | .73027 | -1.04535 | .70981 | -1.07315 |
| 20 | .73250 | -1.06826 | -35.383 | .03447 | .74248 | -1.05421 | .72252 | -1.08231 |
| 21 | .74496 | -1.07695 | -34.416 | .03428 | .75465 | -1.06281 | .73527 | -1.09109 |
| 22 | .75742 | -1.08533 | -33.448 | .03395 | .76678 | -1.07117 | .74806 | -1.09950 |
| 23 | .76988 | -1.09341 | -32.481 | .03349 | .77887 | -1.07929 | .76089 | -1.10754 |
| 24 | .78234 | -1.10120 | -31.519 | .03289 | .79094 | -1.08718 | .77374 | -1.11522 |
| 25 | .79480 | -1.10870 | -30.564 | .03217 | .80298 | -1.09485 | .78662 | -1.12255 |
| 26 | .80726 | -1.11592 | -29.619 | .03133 | .81500 | -1.10230 | .79952 | -1.12953 |
| 27 | .81972 | -1.12287 | -28.687 | .03036 | .82700 | -1.10955 | .81243 | -1.13619 |
| 28 | .83218 | -1.12956 | -27.772 | .02928 | .83900 | -1.11660 | .82535 | -1.14251 |
| 29 | .84464 | -1.13599 | -26.876 | .02808 | .85098 | -1.12347 | .83829 | -1.14852 |
| 30 | .85710 | -1.14219 | -26.004 | .02678 | .86296 | -1.13016 | .85123 | -1.15422 |
| 31 | .86955 | -1.14815 | -25.157 | .02536 | .87495 | -1.13668 | .86416 | -1.15963 |
| 32 | .88201 | -1.15390 | -24.341 | .02384 | .88693 | -1.14304 | .87710 | -1.16476 |
| 33 | .89447 | -1.15943 | -23.557 | .02221 | .89891 | -1.14925 | .89004 | -1.16961 |
| 34 | .90693 | -1.16477 | -22.810 | .02048 | .91090 | -1.15533 | .90296 | -1.17420 |
| 35 | .91939 | -1.16991 | -22.102 | .01864 | .92290 | -1.16128 | .91589 | -1.17855 |
| 36 | .93185 | -1.17489 | -21.437 | .01671 | .93491 | -1.16711 | .92880 | -1.18267 |
| 37 | .94431 | -1.17970 | -20.819 | .01468 | .94692 | -1.17284 | .94170 | -1.18656 |
| 38 | .95677 | -1.18437 | -20.245 | .01254 | .95894 | -1.17848 | .95460 | -1.19025 |
| 39 | .96923 | -1.18890 | -19.742 | .01031 | .97097 | -1.18405 | .96749 | -1.19375 |
| 40 | .98169 | -1.19331 | -19.221 | .00799 | .98301 | -1.18954 | .98038 | -1.19708 |
| 41 | .99415 | -1.19761 | -19.029 | .00556 | .99506 | -1.19498 | .99324 | -1.20024 |
| 42 | .99757 | -1.19880 | -19.087 | .00488 | .99837 | -1.19649 | .99677 | -1.20110 |

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## SPLITTER VANE

## STREAMSURFACE GEOMETRY ON STREAMLINE NUMBER 7

| POINT NUMBER | MEANLINE DATA X | Y | ANGLE | THICKNESS | SURFACE COORDINATE DATA XS | YS | XP | YP |
|---|---|---|---|---|---|---|---|---|
| 1 | .50245 | -.86186 | -51.777 | .00492 | .50438 | -.86034 | .50052 | -.86338 |
| 2 | .50820 | -.86910 | -51.318 | .00653 | .51075 | -.86706 | .50565 | -.87114 |
| 3 | .52066 | -.88442 | -50.516 | .00982 | .52445 | -.88130 | .51687 | -.88755 |
| 4 | .53312 | -.89937 | -49.855 | .01285 | .53803 | -.89523 | .52820 | -.90352 |
| 5 | .54557 | -.91396 | -49.128 | .01564 | .55149 | -.90884 | .53966 | -.91907 |
| 6 | .55803 | -.92817 | -48.393 | .01818 | .56483 | -.92213 | .55124 | -.93420 |
| 7 | .57049 | -.94201 | -47.634 | .02049 | .57806 | -.93511 | .56292 | -.94891 |
| 8 | .58295 | -.95549 | -46.855 | .02257 | .59118 | -.94777 | .57471 | -.96320 |
| 9 | .59540 | -.96859 | -46.056 | .02444 | .60420 | -.96011 | .58661 | -.97707 |
| 10 | .60786 | -.98134 | -45.238 | .02609 | .61712 | -.97215 | .59860 | -.99052 |
| 11 | .62032 | -.99372 | -44.401 | .02755 | .62996 | -.98388 | .61068 | -1.00356 |
| 12 | .63278 | -1.00574 | -43.546 | .02881 | .64270 | -.99530 | .62285 | -1.01618 |
| 13 | .64523 | -1.01740 | -42.674 | .02988 | .65536 | -1.00641 | .63510 | -1.02838 |
| 14 | .65769 | -1.02871 | -41.786 | .03078 | .66795 | -1.01723 | .64744 | -1.04018 |
| 15 | .67015 | -1.03967 | -40.883 | .03150 | .68046 | -1.02776 | .65984 | -1.05157 |
| 16 | .68261 | -1.05028 | -39.966 | .03206 | .69290 | -1.03799 | .67231 | -1.06256 |
| 17 | .69506 | -1.06055 | -39.038 | .03246 | .70528 | -1.04794 | .68484 | -1.07315 |
| 18 | .70752 | -1.07048 | -38.100 | .03270 | .71761 | -1.05762 | .69743 | -1.08335 |
| 19 | .71998 | -1.08009 | -37.153 | .03280 | .72988 | -1.06701 | .71007 | -1.09316 |
| 20 | .73243 | -1.08936 | -36.200 | .03275 | .74211 | -1.07615 | .72276 | -1.10258 |
| 21 | .74489 | -1.09832 | -35.243 | .03257 | .75429 | -1.08502 | .73549 | -1.11152 |
| 22 | .75735 | -1.10697 | -34.285 | .03226 | .76644 | -1.09364 | .74826 | -1.12030 |
| 23 | .76981 | -1.11531 | -33.327 | .03182 | .77855 | -1.10202 | .76107 | -1.12860 |
| 24 | .78226 | -1.12336 | -32.374 | .03125 | .79063 | -1.11016 | .77390 | -1.13655 |
| 25 | .79472 | -1.13111 | -31.427 | .03057 | .80269 | -1.11807 | .78675 | -1.14415 |
| 26 | .80718 | -1.13858 | -30.489 | .02977 | .81473 | -1.12575 | .79963 | -1.15141 |
| 27 | .81964 | -1.14578 | -29.564 | .02886 | .82676 | -1.13323 | .81252 | -1.15833 |
| 28 | .83209 | -1.15272 | -28.655 | .02784 | .83877 | -1.14050 | .82542 | -1.16493 |
| 29 | .84455 | -1.15940 | -27.766 | .02671 | .85077 | -1.14758 | .83833 | -1.17122 |
| 30 | .85701 | -1.16584 | -26.898 | .02548 | .86277 | -1.15448 | .85124 | -1.17720 |
| 31 | .86947 | -1.17204 | -26.057 | .02415 | .87477 | -1.16120 | .86416 | -1.18289 |
| 32 | .88192 | -1.17802 | -25.244 | .02272 | .88677 | -1.16775 | .87708 | -1.18830 |
| 33 | .89438 | -1.18379 | -24.464 | .02119 | .89877 | -1.17415 | .88999 | -1.19344 |
| 34 | .90684 | -1.18936 | -23.720 | .01956 | .91077 | -1.18041 | .90290 | -1.19832 |
| 35 | .91930 | -1.19475 | -23.015 | .01784 | .92278 | -1.18654 | .91581 | -1.20296 |
| 36 | .93175 | -1.19995 | -22.352 | .01603 | .93480 | -1.19254 | .92871 | -1.20736 |
| 37 | .94421 | -1.20499 | -21.736 | .01412 | .94682 | -1.19844 | .94160 | -1.21155 |
| 38 | .95667 | -1.20989 | -21.163 | .01212 | .95886 | -1.20424 | .95448 | -1.21554 |
| 39 | .96913 | -1.21465 | -20.661 | .01003 | .97089 | -1.20995 | .96736 | -1.21934 |
| 40 | .98158 | -1.21928 | -20.141 | .00785 | .98293 | -1.21560 | .98023 | -1.22297 |
| 41 | .99404 | -1.22381 | -19.949 | .00558 | .99499 | -1.22119 | .99309 | -1.22643 |
| 42 | .99755 | -1.22509 | -20.007 | .00492 | .99839 | -1.22277 | .99671 | -1.22740 |

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SPLITTER VANE

STREAMSURFACE GEOMETRY ON STREAMLINE NUMBER 8

| POINT NUMBER | MEANLINE DATA | | | | SURFACE COORDINATE DATA | | | |
|---|---|---|---|---|---|---|---|---|
| | X | Y | ANGLE | THICKNESS | XS | YS | XP | YP |
| 1 | .50246 | -.87882 | -52.378 | .00494 | .50442 | -.87731 | .50051 | -.88033 |
| 2 | .50818 | -.88618 | -51.926 | .00646 | .51072 | -.88419 | .50564 | -.88817 |
| 3 | .52064 | -.90184 | -51.134 | .00956 | .52436 | -.89884 | .51692 | -.90483 |
| 4 | .53309 | -.91712 | -50.482 | .01242 | .53788 | -.91317 | .52830 | -.92107 |
| 5 | .54555 | -.93203 | -49.764 | .01504 | .55129 | -.92717 | .53981 | -.93689 |
| 6 | .55800 | -.94656 | -49.038 | .01743 | .56459 | -.94085 | .55142 | -.95228 |
| 7 | .57046 | -.96072 | -48.287 | .01960 | .57778 | -.95420 | .56314 | -.96725 |
| 8 | .58292 | -.97451 | -47.517 | .02156 | .59087 | -.96723 | .57496 | -.98179 |
| 9 | .59537 | -.98793 | -46.728 | .02332 | .60386 | -.97994 | .58688 | -.99592 |
| 10 | .60783 | -1.00097 | -45.918 | .02488 | .61676 | -.99232 | .59889 | -1.00963 |
| 11 | .62028 | -1.01365 | -45.090 | .02624 | .62958 | -1.00439 | .61099 | -1.02292 |
| 12 | .63274 | -1.02596 | -44.243 | .02742 | .64231 | -1.01614 | .62317 | -1.03579 |
| 13 | .64520 | -1.03792 | -43.380 | .02843 | .65496 | -1.02758 | .63543 | -1.04825 |
| 14 | .65765 | -1.04951 | -42.500 | .02927 | .66754 | -1.03872 | .64776 | -1.06030 |
| 15 | .67011 | -1.06074 | -41.605 | .02994 | .68005 | -1.04955 | .66017 | -1.07194 |
| 16 | .68256 | -1.07163 | -40.696 | .03046 | .69249 | -1.06008 | .67263 | -1.08318 |
| 17 | .69502 | -1.08217 | -39.775 | .03083 | .70488 | -1.07032 | .68516 | -1.09402 |
| 18 | .70747 | -1.09237 | -38.843 | .03105 | .71721 | -1.08028 | .69774 | -1.10446 |
| 19 | .71993 | -1.10223 | -37.903 | .03114 | .72950 | -1.08995 | .71037 | -1.11452 |
| 20 | .73239 | -1.11177 | -36.956 | .03109 | .74173 | -1.09934 | .72304 | -1.12419 |
| 21 | .74484 | -1.12098 | -36.004 | .03091 | .75393 | -1.10847 | .73576 | -1.13348 |
| 22 | .75730 | -1.12987 | -35.051 | .03061 | .76609 | -1.11734 | .74851 | -1.14240 |
| 23 | .76975 | -1.13846 | -34.098 | .03020 | .77822 | -1.12595 | .76129 | -1.15096 |
| 24 | .78221 | -1.14674 | -33.148 | .02966 | .79032 | -1.13432 | .77410 | -1.15916 |
| 25 | .79467 | -1.15473 | -32.205 | .02901 | .80240 | -1.14245 | .78693 | -1.16700 |
| 26 | .80712 | -1.16243 | -31.270 | .02826 | .81446 | -1.15036 | .79979 | -1.17451 |
| 27 | .81958 | -1.16986 | -30.347 | .02740 | .82650 | -1.15804 | .81266 | -1.18168 |
| 28 | .83203 | -1.17702 | -29.440 | .02644 | .83853 | -1.16551 | .82554 | -1.18853 |
| 29 | .84449 | -1.18392 | -28.552 | .02538 | .85055 | -1.17278 | .83842 | -1.19507 |
| 30 | .85695 | -1.19058 | -27.685 | .02422 | .86257 | -1.17985 | .85132 | -1.20130 |
| 31 | .86940 | -1.19700 | -26.844 | .02297 | .87459 | -1.18675 | .86422 | -1.20725 |
| 32 | .88186 | -1.20319 | -26.031 | .02162 | .88660 | -1.19348 | .87711 | -1.21291 |
| 33 | .89431 | -1.20917 | -25.251 | .02019 | .89862 | -1.20004 | .89001 | -1.21830 |
| 34 | .90677 | -1.21494 | -24.506 | .01866 | .91064 | -1.20645 | .90290 | -1.22343 |
| 35 | .91923 | -1.22053 | -23.800 | .01705 | .92266 | -1.21273 | .91579 | -1.22833 |
| 36 | .93168 | -1.22594 | -23.135 | .01535 | .93470 | -1.21888 | .92867 | -1.23299 |
| 37 | .94414 | -1.23118 | -22.517 | .01356 | .94673 | -1.22491 | .94154 | -1.23744 |
| 38 | .95659 | -1.23627 | -21.943 | .01169 | .95878 | -1.23085 | .95441 | -1.24169 |
| 39 | .96905 | -1.24122 | -21.440 | .00973 | .97083 | -1.23669 | .96727 | -1.24575 |
| 40 | .98150 | -1.24605 | -20.918 | .00769 | .98288 | -1.24246 | .98013 | -1.24964 |
| 41 | .99396 | -1.25077 | -20.725 | .00557 | .99495 | -1.24817 | .99298 | -1.25337 |
| 42 | .99754 | -1.25212 | -20.785 | .00494 | .99841 | -1.24981 | .99666 | -1.25444 |

# SPLITTER VANE

## STREAM SURFACE GEOMETRY ON STREAMLINE NUMBER 9

| POINT NUMBER | MEANLINE DATA | | | | SURFACE COORDINATE DATA | | | |
|---|---|---|---|---|---|---|---|---|
| | X | Y | ANGLE | THICKNESS | XS | YS | XP | YP |
| 1 | .50247 | -.89771 | -53.000 | .00496 | .50445 | -.89622 | .50049 | -.89920 |
| 2 | .50817 | -.90521 | -52.554 | .00639 | .51071 | -.90327 | .50563 | -.90715 |
| 3 | .52062 | -.92123 | -51.769 | .00932 | .52429 | -.91834 | .51696 | -.92411 |
| 4 | .53308 | -.93686 | -51.123 | .01203 | .53776 | -.93309 | .52840 | -.94063 |
| 5 | .54553 | -.95211 | -50.412 | .01451 | .55112 | -.94749 | .53994 | -.95674 |
| 6 | .55799 | -.96699 | -49.692 | .01677 | .56438 | -.96156 | .55160 | -.97241 |
| 7 | .57044 | -.98148 | -48.948 | .01882 | .57754 | -.97530 | .56335 | -.98766 |
| 8 | .58290 | -.99559 | -48.185 | .02067 | .59060 | -.98870 | .57520 | -1.00248 |
| 9 | .59535 | -1.00932 | -47.401 | .02232 | .60357 | -1.00177 | .58714 | -1.01688 |
| 10 | .60781 | -1.02268 | -46.597 | .02379 | .61645 | -1.01451 | .59917 | -1.03085 |
| 11 | .62026 | -1.03566 | -45.774 | .02508 | .62925 | -1.02692 | .61128 | -1.04441 |
| 12 | .63272 | -1.04827 | -44.933 | .02619 | .64197 | -1.03900 | .62347 | -1.05754 |
| 13 | .64517 | -1.06051 | -44.074 | .02713 | .65461 | -1.05077 | .63574 | -1.07026 |
| 14 | .65763 | -1.07239 | -43.199 | .02792 | .66718 | -1.06222 | .64807 | -1.08257 |
| 15 | .67008 | -1.08391 | -42.307 | .02855 | .67969 | -1.07335 | .66047 | -1.09446 |
| 16 | .68254 | -1.09506 | -41.402 | .02903 | .69214 | -1.08418 | .67294 | -1.10595 |
| 17 | .69499 | -1.10587 | -40.484 | .02937 | .70453 | -1.09470 | .68546 | -1.11704 |
| 18 | .70745 | -1.11633 | -39.555 | .02957 | .71686 | -1.10493 | .69803 | -1.12773 |
| 19 | .71990 | -1.12645 | -38.617 | .02965 | .72915 | -1.11486 | .71065 | -1.13803 |
| 20 | .73236 | -1.13623 | -37.671 | .02960 | .74140 | -1.12451 | .72331 | -1.14794 |
| 21 | .74481 | -1.14568 | -36.721 | .02942 | .75361 | -1.13389 | .73601 | -1.15747 |
| 22 | .75727 | -1.15481 | -35.767 | .02914 | .76578 | -1.14299 | .74875 | -1.16663 |
| 23 | .76972 | -1.16363 | -34.814 | .02873 | .77792 | -1.15183 | .76152 | -1.17542 |
| 24 | .78217 | -1.17214 | -33.863 | .02822 | .79004 | -1.16042 | .77431 | -1.18385 |
| 25 | .79463 | -1.18035 | -32.918 | .02761 | .80213 | -1.16876 | .78713 | -1.19193 |
| 26 | .80708 | -1.18826 | -31.981 | .02690 | .81421 | -1.17686 | .79996 | -1.19967 |
| 27 | .81954 | -1.19590 | -31.056 | .02608 | .82627 | -1.18473 | .81281 | -1.20707 |
| 28 | .83199 | -1.20327 | -30.146 | .02517 | .83832 | -1.19238 | .82567 | -1.21415 |
| 29 | .84445 | -1.21037 | -29.254 | .02417 | .85036 | -1.19983 | .83854 | -1.22092 |
| 30 | .85690 | -1.21722 | -28.383 | .02308 | .86239 | -1.20707 | .85142 | -1.22738 |
| 31 | .86936 | -1.22383 | -27.537 | .02190 | .87442 | -1.21412 | .86430 | -1.23354 |
| 32 | .88181 | -1.23022 | -26.720 | .02063 | .88645 | -1.22100 | .87717 | -1.23943 |
| 33 | .89427 | -1.23638 | -25.935 | .01928 | .89848 | -1.22771 | .89005 | -1.24505 |
| 34 | .90672 | -1.24233 | -25.185 | .01785 | .91052 | -1.23426 | .90293 | -1.25041 |
| 35 | .91918 | -1.24809 | -24.474 | .01633 | .92256 | -1.24066 | .91580 | -1.25553 |
| 36 | .93163 | -1.25368 | -23.804 | .01473 | .93461 | -1.24694 | .92866 | -1.26041 |
| 37 | .94409 | -1.25909 | -23.182 | .01305 | .94666 | -1.25309 | .94152 | -1.26509 |
| 38 | .95654 | -1.26435 | -22.602 | .01130 | .95871 | -1.25913 | .95437 | -1.26956 |
| 39 | .96900 | -1.26946 | -22.094 | .00946 | .97078 | -1.26508 | .96722 | -1.27385 |
| 40 | .98145 | -1.27446 | -21.568 | .00755 | .98284 | -1.27095 | .98006 | -1.27797 |
| 41 | .99391 | -1.27934 | -21.373 | .00555 | .99492 | -1.27675 | .99289 | -1.28192 |
| 42 | .99753 | -1.28076 | -21.434 | .00496 | .09843 | -1.27845 | .99662 | -1.28307 |

## STREAMSURFACE GEOMETRY ON STREAMLINE NUMBER 10

| POINT NUMBER | MEANLINE DATA | | | | SURFACE COORDINATE DATA | | | |
|---|---|---|---|---|---|---|---|---|
| | X | Y | ANGLE | THICKNESS | XS | YS | XP | YP |
| 1 | .50248 | -.91916 | -53.657 | .00493 | .50449 | -.91769 | .50048 | -.92064 |
| 2 | .50818 | -.92683 | -53.215 | .00634 | .51072 | -.92494 | .50563 | -.92873 |
| 3 | .52063 | -.94324 | -52.436 | .00915 | .52426 | -.94045 | .51700 | -.94603 |
| 4 | .53308 | -.95925 | -51.795 | .01174 | .53769 | -.95562 | .52847 | -.96288 |
| 5 | .54554 | -.97488 | -51.088 | .01411 | .55102 | -.97044 | .54005 | -.97931 |
| 6 | .55799 | -.99011 | -50.372 | .01627 | .56425 | -.98492 | .55173 | -.99530 |
| 7 | .57044 | -1.00495 | -49.632 | .01822 | .57739 | -.99905 | .56350 | -1.01085 |
| 8 | .58290 | -1.01941 | -48.872 | .01998 | .59042 | -1.01234 | .57537 | -1.02599 |
| 9 | .59535 | -1.03348 | -48.092 | .02156 | .60337 | -1.02528 | .58733 | -1.04068 |
| 10 | .60781 | -1.04716 | -47.291 | .02295 | .61624 | -1.03938 | .59937 | -1.05495 |
| 11 | .62026 | -1.06046 | -46.471 | .02417 | .62902 | -1.05214 | .61150 | -1.06879 |
| 12 | .63271 | -1.07338 | -45.631 | .02523 | .64173 | -1.06456 | .62370 | -1.08220 |
| 13 | .64517 | -1.08593 | -44.774 | .02612 | .65437 | -1.07665 | .63597 | -1.09520 |
| 14 | .65762 | -1.09810 | -43.899 | .02686 | .66693 | -1.08842 | .64831 | -1.10777 |
| 15 | .67007 | -1.10990 | -43.008 | .02745 | .67944 | -1.09986 | .66071 | -1.11993 |
| 16 | .68253 | -1.12133 | -42.102 | .02791 | .69188 | -1.11098 | .67317 | -1.13168 |
| 17 | .69498 | -1.13240 | -41.183 | .02822 | .70427 | -1.12178 | .68569 | -1.14303 |
| 18 | .70744 | -1.14312 | -40.252 | .02841 | .71661 | -1.13228 | .69826 | -1.15397 |
| 19 | .71989 | -1.15349 | -39.311 | .02847 | .72891 | -1.14248 | .71087 | -1.16451 |
| 20 | .73234 | -1.16352 | -38.362 | .02842 | .74116 | -1.15238 | .72353 | -1.17466 |
| 21 | .74480 | -1.17321 | -37.407 | .02824 | .75338 | -1.16199 | .73622 | -1.18443 |
| 22 | .75725 | -1.18257 | -36.449 | .02796 | .76556 | -1.17133 | .74894 | -1.19382 |
| 23 | .76970 | -1.19161 | -35.490 | .02757 | .77771 | -1.18038 | .76170 | -1.20283 |
| 24 | .78216 | -1.20033 | -34.534 | .02708 | .78983 | -1.18918 | .77448 | -1.21149 |
| 25 | .79461 | -1.20875 | -33.581 | .02649 | .80194 | -1.19772 | .78729 | -1.21979 |
| 26 | .80707 | -1.21687 | -32.637 | .02581 | .81402 | -1.20601 | .80011 | -1.22774 |
| 27 | .81952 | -1.22471 | -31.704 | .02503 | .82610 | -1.21406 | .81294 | -1.23535 |
| 28 | .83197 | -1.23226 | -30.785 | .02416 | .83816 | -1.22188 | .82579 | -1.24264 |
| 29 | .84443 | -1.23955 | -29.884 | .02321 | .85021 | -1.22949 | .83865 | -1.24961 |
| 30 | .85688 | -1.24658 | -29.004 | .02217 | .86225 | -1.23689 | .85151 | -1.25627 |
| 31 | .86933 | -1.25336 | -28.149 | .02104 | .87430 | -1.24409 | .86437 | -1.26264 |
| 32 | .88179 | -1.25991 | -27.322 | .01984 | .88634 | -1.25110 | .87724 | -1.26872 |
| 33 | .89424 | -1.26623 | -26.527 | .01855 | .89839 | -1.25793 | .89010 | -1.27453 |
| 34 | .90670 | -1.27235 | -25.768 | .01719 | .91043 | -1.26461 | .90296 | -1.28009 |
| 35 | .91915 | -1.27826 | -25.047 | .01575 | .92248 | -1.27113 | .91582 | -1.28540 |
| 36 | .93160 | -1.28399 | -24.368 | .01424 | .93454 | -1.27751 | .92867 | -1.29048 |
| 37 | .94406 | -1.28955 | -23.737 | .01265 | .94660 | -1.28376 | .94151 | -1.29534 |
| 38 | .95651 | -1.29495 | -23.149 | .01098 | .95867 | -1.28990 | .95435 | -1.30000 |
| 39 | .96896 | -1.30021 | -22.634 | .00924 | .97074 | -1.29594 | .96719 | -1.30447 |
| 40 | .98142 | -1.30533 | -22.100 | .00743 | .98282 | -1.30189 | .98002 | -1.30877 |
| 41 | .99387 | -1.31035 | -21.901 | .00555 | .99491 | -1.30778 | .99284 | -1.31292 |
| 42 | .99752 | -1.31181 | -21.963 | .00498 | .99845 | -1.30950 | .99658 | -1.31412 |

SPLITTER VANE

STREAMSURFACE GEOMETRY ON STREAMLINE NUMBER 11

| POINT NUMBER | MEANLINE DATA X | Y | ANGLE | THICKNESS | SURFACE COORDINATE DATA XS | YS | XP | YP |
|---|---|---|---|---|---|---|---|---|
| 1 | .50249 | -.94369 | -54.356 | .00500 | .50453 | -.94223 | .50046 | -.94515 |
| 2 | .50813 | -.95157 | -53.916 | .00632 | .51075 | -.94971 | .50564 | -.95343 |
| 3 | .52064 | -.96840 | -53.141 | .00905 | .52426 | -.96568 | .51702 | -.97111 |
| 4 | .53310 | -.98482 | -52.502 | .01155 | .53768 | -.98131 | .52851 | -.98834 |
| 5 | .54555 | -1.00085 | -51.797 | .01334 | .55099 | -.99657 | .54011 | -1.00513 |
| 6 | .55800 | -1.01647 | -51.083 | .01593 | .56420 | -1.01147 | .55181 | -1.02147 |
| 7 | .57046 | -1.03169 | -50.344 | .01782 | .57732 | -1.02601 | .56360 | -1.03738 |
| 8 | .58291 | -1.04652 | -49.585 | .01952 | .59034 | -1.04019 | .57548 | -1.05285 |
| 9 | .59536 | -1.06094 | -48.805 | .02104 | .60328 | -1.05402 | .58745 | -1.06787 |
| 10 | .60781 | -1.07497 | -48.003 | .02238 | .61613 | -1.06749 | .59950 | -1.08246 |
| 11 | .62027 | -1.08861 | -47.182 | .02355 | .62891 | -1.08060 | .61163 | -1.09661 |
| 12 | .63272 | -1.10185 | -46.340 | .02456 | .64161 | -1.09337 | .62384 | -1.11033 |
| 13 | .64517 | -1.11471 | -45.480 | .02542 | .65423 | -1.10580 | .63611 | -1.12362 |
| 14 | .65763 | -1.12718 | -44.602 | .02612 | .66680 | -1.11788 | .64845 | -1.13648 |
| 15 | .67008 | -1.13927 | -43.706 | .02669 | .67930 | -1.12963 | .66086 | -1.14892 |
| 16 | .68253 | -1.15099 | -42.795 | .02711 | .69174 | -1.14104 | .67332 | -1.16094 |
| 17 | .69498 | -1.16233 | -41.870 | .02741 | .70413 | -1.15213 | .68584 | -1.17254 |
| 18 | .70744 | -1.17331 | -40.932 | .02758 | .71647 | -1.16289 | .69840 | -1.18373 |
| 19 | .71989 | -1.18393 | -39.983 | .02763 | .72877 | -1.17335 | .71101 | -1.19452 |
| 20 | .73234 | -1.19420 | -39.025 | .02757 | .74102 | -1.18349 | .72366 | -1.20491 |
| 21 | .74480 | -1.20412 | -38.060 | .02740 | .75324 | -1.19334 | .73635 | -1.21491 |
| 22 | .75725 | -1.21371 | -37.092 | .02711 | .76543 | -1.20289 | .74907 | -1.22452 |
| 23 | .76970 | -1.22296 | -36.121 | .02673 | .77758 | -1.21216 | .76182 | -1.23375 |
| 24 | .78216 | -1.23188 | -35.152 | .02625 | .78971 | -1.22115 | .77460 | -1.24262 |
| 25 | .79461 | -1.24050 | -34.187 | .02568 | .80182 | -1.22988 | .78739 | -1.25112 |
| 26 | .80706 | -1.24880 | -33.229 | .02501 | .81391 | -1.23834 | .80021 | -1.25927 |
| 27 | .81951 | -1.25682 | -32.281 | .02426 | .82599 | -1.24656 | .81304 | -1.26707 |
| 28 | .83197 | -1.26454 | -31.347 | .02342 | .83806 | -1.25454 | .82588 | -1.27454 |
| 29 | .84442 | -1.27199 | -30.431 | .02249 | .85012 | -1.26229 | .83872 | -1.28169 |
| 30 | .85687 | -1.27918 | -29.535 | .02149 | .86217 | -1.26983 | .85158 | -1.28852 |
| 31 | .86933 | -1.28611 | -28.664 | .02041 | .87422 | -1.27715 | .86443 | -1.29506 |
| 32 | .88178 | -1.29279 | -27.822 | .01925 | .88627 | -1.28428 | .87729 | -1.30131 |
| 33 | .89423 | -1.29925 | -27.011 | .01801 | .89832 | -1.29123 | .89014 | -1.30728 |
| 34 | .90669 | -1.30550 | -26.236 | .01670 | .91038 | -1.29800 | .90299 | -1.31299 |
| 35 | .91914 | -1.31153 | -25.500 | .01532 | .92244 | -1.30462 | .91584 | -1.31845 |
| 36 | .93159 | -1.31738 | -24.807 | .01386 | .93450 | -1.31109 | .92868 | -1.32367 |
| 37 | .94404 | -1.32305 | -24.162 | .01234 | .94657 | -1.31742 | .94152 | -1.32868 |
| 38 | .95650 | -1.32856 | -23.561 | .01074 | .95864 | -1.32363 | .95435 | -1.33348 |
| 39 | .96895 | -1.33392 | -23.034 | .00908 | .97073 | -1.32974 | .96717 | -1.33809 |
| 40 | .98140 | -1.33914 | -22.488 | .00734 | .98281 | -1.33575 | .98000 | -1.34254 |
| 41 | .99386 | -1.34426 | -22.285 | .00554 | .99491 | -1.34169 | .99281 | -1.34682 |
| 42 | .99751 | -1.34575 | -22.348 | .00500 | .99846 | -1.34344 | .99656 | -1.34807 |

SPLITTER VANE

STREAMSURFACE GEOMETRY ON STREAMLINE NUMBER 12

| POINT NUMBER | MEANLINE DATA | | | | SURFACE COORDINATE DATA | | | |
|---|---|---|---|---|---|---|---|---|
| | X | Y | ANGLE | THICKNESS | XS | YS | XP | YP |
| 1 | .50250 | -.97161 | -55.095 | .00501 | .50455 | -.97018 | .50044 | -.97305 |
| 2 | .50821 | -.97973 | -54.655 | .00631 | .51078 | -.97790 | .50563 | -.98156 |
| 3 | .52066 | -.99702 | -53.881 | .00899 | .52429 | -.99437 | .51703 | -.99967 |
| 4 | .53311 | -1.01389 | -53.242 | .01145 | .53770 | -1.01047 | .52853 | -1.01732 |
| 5 | .54557 | -1.03035 | -52.537 | .01370 | .55100 | -1.02619 | .54013 | -1.03452 |
| 6 | .55802 | -1.04640 | -51.822 | .01575 | .56421 | -1.04153 | .55183 | -1.05126 |
| 7 | .57047 | -1.06203 | -51.081 | .01760 | .57732 | -1.05650 | .56362 | -1.06755 |
| 8 | .58292 | -1.07724 | -50.320 | .01926 | .59034 | -1.07109 | .57551 | -1.08339 |
| 9 | .59538 | -1.09205 | -49.536 | .02075 | .60327 | -1.08531 | .58748 | -1.09878 |
| 10 | .60783 | -1.10644 | -48.730 | .02205 | .61612 | -1.09917 | .59954 | -1.11371 |
| 11 | .62028 | -1.12043 | -47.903 | .02319 | .62889 | -1.11265 | .61168 | -1.12820 |
| 12 | .63273 | -1.13401 | -47.056 | .02417 | .64158 | -1.12577 | .62389 | -1.14224 |
| 13 | .64519 | -1.14719 | -46.188 | .02500 | .65421 | -1.13853 | .63617 | -1.15584 |
| 14 | .65764 | -1.15997 | -45.301 | .02568 | .66677 | -1.15094 | .64851 | -1.16900 |
| 15 | .67009 | -1.17236 | -44.397 | .02622 | .67926 | -1.16299 | .66092 | -1.18172 |
| 16 | .68254 | -1.18436 | -43.475 | .02663 | .69170 | -1.17469 | .67338 | -1.19402 |
| 17 | .69500 | -1.19597 | -42.538 | .02691 | .70409 | -1.18606 | .68590 | -1.20588 |
| 18 | .70745 | -1.20721 | -41.587 | .02707 | .71643 | -1.19709 | .69847 | -1.21733 |
| 19 | .71990 | -1.21807 | -40.624 | .02710 | .72872 | -1.20779 | .71108 | -1.22836 |
| 20 | .73235 | -1.22858 | -39.651 | .02703 | .74098 | -1.21817 | .72373 | -1.23898 |
| 21 | .74481 | -1.23872 | -38.670 | .02685 | .75319 | -1.22824 | .73642 | -1.24920 |
| 22 | .75726 | -1.24851 | -37.683 | .02657 | .76538 | -1.23800 | .74914 | -1.25902 |
| 23 | .76971 | -1.25796 | -36.694 | .02618 | .77753 | -1.24746 | .76189 | -1.26846 |
| 24 | .78216 | -1.26707 | -35.705 | .02571 | .78967 | -1.25663 | .77466 | -1.27751 |
| 25 | .79462 | -1.27586 | -34.719 | .02514 | .80177 | -1.26553 | .78746 | -1.28619 |
| 26 | .80707 | -1.28433 | -33.740 | .02448 | .81387 | -1.27415 | .80027 | -1.29451 |
| 27 | .81952 | -1.29250 | -32.770 | .02374 | .82595 | -1.28252 | .81310 | -1.30248 |
| 28 | .83197 | -1.30037 | -31.814 | .02292 | .83801 | -1.29063 | .82593 | -1.31010 |
| 29 | .84443 | -1.30795 | -30.874 | .02201 | .85007 | -1.29851 | .83878 | -1.31740 |
| 30 | .85688 | -1.31526 | -29.956 | .02103 | .86213 | -1.30615 | .85163 | -1.32437 |
| 31 | .86933 | -1.32231 | -29.062 | .01997 | .87418 | -1.31358 | .86448 | -1.33104 |
| 32 | .88178 | -1.32911 | -28.196 | .01884 | .88623 | -1.32080 | .87733 | -1.33741 |
| 33 | .89424 | -1.33566 | -27.362 | .01764 | .89829 | -1.32783 | .89018 | -1.34350 |
| 34 | .90669 | -1.34200 | -26.565 | .01636 | .91035 | -1.33468 | .90303 | -1.34932 |
| 35 | .91914 | -1.34812 | -25.808 | .01502 | .92241 | -1.34136 | .91587 | -1.35488 |
| 36 | .93159 | -1.35405 | -25.094 | .01360 | .93448 | -1.34739 | .92871 | -1.36021 |
| 37 | .94405 | -1.35979 | -24.429 | .01212 | .94655 | -1.35427 | .94154 | -1.36531 |
| 38 | .95650 | -1.36536 | -23.810 | .01057 | .95863 | -1.36053 | .95436 | -1.37020 |
| 39 | .96895 | -1.37079 | -23.266 | .00896 | .97072 | -1.36667 | .96718 | -1.37490 |
| 40 | .98140 | -1.37607 | -22.703 | .00728 | .98281 | -1.37271 | .98000 | -1.37943 |
| 41 | .99386 | -1.38124 | -22.493 | .00553 | .99491 | -1.37868 | .99280 | -1.38379 |
| 42 | .99750 | -1.38275 | -22.559 | .00501 | .99846 | -1.38044 | .99654 | -1.38506 |

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# SPLITTER VANE

## STREAMSURFACE GEOMETRY ON STREAMLINE NUMBER 13

| POINT NUMBER | MEANLINE DATA | | | | SURFACE COORDINATE DATA | | | |
|---|---|---|---|---|---|---|---|---|
| | X | Y | ANGLE | THICKNESS | XS | YS | XP | YP |
| 1 | .50250 | -1.00223 | -55.848 | .00501 | .50457 | -1.00083 | .50043 | -1.00364 |
| 2 | .50823 | -1.01062 | -55.407 | .00631 | .51083 | -1.00883 | .50563 | -1.01241 |
| 3 | .52069 | -1.02839 | -54.632 | .00898 | .52435 | -1.02580 | .51703 | -1.03099 |
| 4 | .53314 | -1.04574 | -53.990 | .01142 | .53776 | -1.04238 | .52852 | -1.04910 |
| 5 | .54559 | -1.06265 | -53.282 | .01365 | .55106 | -1.05857 | .54012 | -1.06673 |
| 6 | .55804 | -1.07913 | -52.564 | .01568 | .56427 | -1.07437 | .55182 | -1.08390 |
| 7 | .57050 | -1.09518 | -51.818 | .01751 | .57738 | -1.08977 | .56361 | -1.10060 |
| 8 | .58295 | -1.11080 | -51.051 | .01916 | .59040 | -1.10478 | .57550 | -1.11682 |
| 9 | .59540 | -1.12599 | -50.260 | .02062 | .60333 | -1.11940 | .58747 | -1.13259 |
| 10 | .60785 | -1.14076 | -49.447 | .02191 | .61618 | -1.13364 | .59953 | -1.14788 |
| 11 | .62031 | -1.15510 | -48.611 | .02303 | .62894 | -1.14749 | .61167 | -1.16271 |
| 12 | .63276 | -1.16902 | -47.753 | .02399 | .64164 | -1.16096 | .62388 | -1.17709 |
| 13 | .64521 | -1.18252 | -46.874 | .02479 | .65426 | -1.17405 | .63616 | -1.19100 |
| 14 | .65766 | -1.19561 | -45.975 | .02546 | .66682 | -1.18677 | .64851 | -1.20446 |
| 15 | .67012 | -1.20829 | -45.056 | .02598 | .67931 | -1.19912 | .66092 | -1.21747 |
| 16 | .68257 | -1.22057 | -44.118 | .02637 | .69175 | -1.21110 | .67339 | -1.23003 |
| 17 | .69502 | -1.23245 | -43.164 | .02663 | .70413 | -1.22273 | .68591 | -1.24216 |
| 18 | .70748 | -1.24393 | -42.194 | .02677 | .71647 | -1.23401 | .69846 | -1.25385 |
| 19 | .71993 | -1.25503 | -41.211 | .02680 | .72876 | -1.24495 | .71110 | -1.26511 |
| 20 | .73238 | -1.26574 | -40.216 | .02672 | .74101 | -1.25554 | .72376 | -1.27594 |
| 21 | .74483 | -1.27609 | -39.212 | .02653 | .75322 | -1.26581 | .73645 | -1.28636 |
| 22 | .75729 | -1.28607 | -38.202 | .02624 | .76540 | -1.27576 | .74917 | -1.29638 |
| 23 | .76974 | -1.29569 | -37.187 | .02585 | .77755 | -1.28539 | .76193 | -1.30599 |
| 24 | .78219 | -1.30497 | -36.171 | .02537 | .78968 | -1.29473 | .77471 | -1.31520 |
| 25 | .79464 | -1.31390 | -35.158 | .02480 | .80178 | -1.30377 | .78750 | -1.32404 |
| 26 | .80710 | -1.32251 | -34.149 | .02414 | .81387 | -1.31252 | .80032 | -1.33250 |
| 27 | .81955 | -1.33080 | -33.150 | .02340 | .82595 | -1.32100 | .81315 | -1.34060 |
| 28 | .83200 | -1.33878 | -32.164 | .02259 | .83801 | -1.32922 | .82599 | -1.34834 |
| 29 | .84445 | -1.34646 | -31.194 | .02169 | .85007 | -1.33719 | .83884 | -1.35574 |
| 30 | .85691 | -1.35386 | -30.245 | .02072 | .86213 | -1.34491 | .85169 | -1.36281 |
| 31 | .86936 | -1.36099 | -29.320 | .01968 | .87418 | -1.35241 | .86454 | -1.36957 |
| 32 | .88181 | -1.36786 | -28.424 | .01856 | .88623 | -1.35969 | .87739 | -1.37602 |
| 33 | .89426 | -1.37447 | -27.560 | .01738 | .89829 | -1.36677 | .89024 | -1.38218 |
| 34 | .90672 | -1.38086 | -26.734 | .01612 | .91034 | -1.37366 | .90309 | -1.38806 |
| 35 | .91917 | -1.38702 | -25.949 | .01480 | .92241 | -1.38037 | .91593 | -1.39368 |
| 36 | .93162 | -1.39298 | -25.208 | .01342 | .93448 | -1.38691 | .92877 | -1.39905 |
| 37 | .94408 | -1.39875 | -24.518 | .01196 | .94656 | -1.39331 | .94159 | -1.40420 |
| 38 | .95653 | -1.40435 | -23.875 | .01045 | .95864 | -1.39957 | .95441 | -1.40912 |
| 39 | .96898 | -1.40978 | -23.310 | .00887 | .97073 | -1.40571 | .96723 | -1.41385 |
| 40 | .98143 | -1.41508 | -22.724 | .00722 | .98283 | -1.41175 | .98004 | -1.41841 |
| 41 | .99389 | -1.42025 | -22.507 | .00551 | .99494 | -1.41770 | .99283 | -1.42279 |
| 42 | .99750 | -1.42175 | -22.574 | .00501 | .99846 | -1.41943 | .99654 | -1.42406 |

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SPLITTER VANE

STREAMSURFACE GEOMETRY ON STREAMLINE NUMBER 14

| POINT NUMBER | MEANLINE DATA | | | SURFACE COORDINATE DATA | | |
| | X        Y        ANGLE | THICKNESS | XS        YS | XP        YP |
|---|---|---|---|---|---|---|
| 1 | .50249-1.03466-56.592 | .00500 | .50458-1.03328 | .50041-1.03604 |
| 2 | .50827-1.04335-56.147 | .00632 | .51090-1.04159 | .50565-1.04511 |
| 3 | .52073-1.06162-55.370 | .00899 | .52442-1.05907 | .51703-1.06418 |
| 4 | .53318-1.07945-54.724 | .01143 | .53785-1.07615 | .52851-1.08275 |
| 5 | .54563-1.09682-54.011 | .01366 | .55116-1.09281 | .54011-1.10084 |
| 6 | .55809-1.11375-53.287 | .01569 | .56437-1.10906 | .55180-1.11844 |
| 7 | .57054-1.13022-52.535 | .01751 | .57749-1.12490 | .56359-1.13555 |
| 8 | .58299-1.14625-51.759 | .01914 | .59051-1.14032 | .57548-1.15217 |
| 9 | .59545-1.16183-50.959 | .02059 | .60345-1.15534 | .56745-1.16831 |
| 10 | .60790-1.17696-50.135 | .02187 | .61629-1.16995 | .59951-1.18397 |
| 11 | .62035-1.19165-49.287 | .02297 | .62906-1.18416 | .61165-1.19914 |
| 12 | .63281-1.20590-48.416 | .02392 | .64175-1.19797 | .62386-1.21384 |
| 13 | .64525-1.21972-47.521 | .02471 | .65437-1.21138 | .63615-1.22807 |
| 14 | .65771-1.23311-46.605 | .02536 | .66693-1.22440 | .64850-1.24182 |
| 15 | .67017-1.24607-45.668 | .02586 | .67942-1.23703 | .66092-1.25510 |
| 16 | .68262-1.25860-44.710 | .02624 | .69185-1.24928 | .67339-1.26793 |
| 17 | .69507-1.27072-43.734 | .02649 | .70423-1.26116 | .68592-1.28029 |
| 18 | .70753-1.28244-42.741 | .02661 | .71656-1.27266 | .69850-1.29221 |
| 19 | .71998-1.29374-41.732 | .02663 | .72884-1.28381 | .71112-1.30368 |
| 20 | .73243-1.30465-40.711 | .02653 | .74109-1.29460 | .72378-1.31471 |
| 21 | .74489-1.31518-39.678 | .02633 | .75329-1.30504 | .73648-1.32531 |
| 22 | .75734-1.32532-38.637 | .02603 | .76547-1.31515 | .74922-1.33548 |
| 23 | .76979-1.33509-37.591 | .02563 | .77761-1.32493 | .76198-1.34524 |
| 24 | .78225-1.34450-36.542 | .02514 | .78973-1.33440 | .77476-1.35460 |
| 25 | .79470-1.35355-35.494 | .02457 | .80183-1.34355 | .78757-1.36355 |
| 26 | .80715-1.36226-34.450 | .02391 | .81392-1.35240 | .80039-1.37212 |
| 27 | .81961-1.37064-33.415 | .02317 | .82599-1.36097 | .81323-1.38031 |
| 28 | .83206-1.37870-32.392 | .02235 | .83805-1.36926 | .82607-1.38814 |
| 29 | .84451-1.38645-31.385 | .02146 | .85010-1.37728 | .83893-1.39561 |
| 30 | .85697-1.39390-30.398 | .02050 | .86215-1.38506 | .85173-1.40273 |
| 31 | .86942-1.40106-29.436 | .01946 | .87420-1.39259 | .86464-1.40953 |
| 32 | .88187-1.40795-28.503 | .01835 | .88625-1.39989 | .87750-1.41602 |
| 33 | .89433-1.41459-27.604 | .01718 | .89831-1.40698 | .89035-1.42220 |
| 34 | .90678-1.42098-26.742 | .01594 | .91037-1.41386 | .90319-1.42810 |
| 35 | .91923-1.42715-25.923 | .01464 | .92243-1.42058 | .91604-1.43373 |
| 36 | .93169-1.43309-25.150 | .01327 | .93451-1.42709 | .92887-1.43910 |
| 37 | .94414-1.43884-24.429 | .01184 | .94659-1.43346 | .94169-1.44423 |
| 38 | .95659-1.44441-23.757 | .01034 | .95868-1.43968 | .95451-1.44915 |
| 39 | .96905-1.44982-23.167 | .00878 | .97078-1.44578 | .96732-1.45385 |
| 40 | .98150-1.45507-22.555 | .00717 | .98288-1.45176 | .98013-1.45838 |
| 41 | .99395-1.46019-22.328 | .00549 | .99500-1.45766 | .99291-1.46273 |
| 42 | .99751-1.46165-22.398 | .00500 | .99846-1.45934 | .99655-1.46396 |

# SPLITTER VANE

## STREAMSURFACE GEOMETRY ON STREAMLINE NUMBER 15

| POINT NUMBER | MEANLINE DATA | | | | SURFACE COORDINATE DATA | | | |
|---|---|---|---|---|---|---|---|---|
| | X | Y | ANGLE | THICKNESS | XS | YS | XP | YP |
| 1 | .50249 | -1.06893 | -57.337 | .00499 | .50459 | -1.06759 | .50039 | -1.07028 |
| 2 | .50832 | -1.07796 | -56.888 | .00633 | .51097 | -1.07623 | .50567 | -1.07969 |
| 3 | .52078 | -1.09675 | -56.108 | .00901 | .52452 | -1.09424 | .51704 | -1.09926 |
| 4 | .53323 | -1.11508 | -55.458 | .01147 | .53795 | -1.11182 | .52851 | -1.11833 |
| 5 | .54569 | -1.13293 | -54.740 | .01370 | .55128 | -1.12897 | .54009 | -1.13688 |
| 6 | .55814 | -1.15031 | -54.008 | .01573 | .56450 | -1.14569 | .55178 | -1.15493 |
| 7 | .57060 | -1.16722 | -53.248 | .01755 | .57763 | -1.16197 | .56356 | -1.17247 |
| 8 | .58305 | -1.18366 | -52.464 | .01918 | .59066 | -1.17782 | .57545 | -1.18951 |
| 9 | .59550 | -1.19964 | -51.653 | .02062 | .60359 | -1.19324 | .58742 | -1.20604 |
| 10 | .60796 | -1.21515 | -50.817 | .02189 | .61644 | -1.20824 | .59948 | -1.22207 |
| 11 | .62041 | -1.23020 | -49.956 | .02298 | .62921 | -1.22281 | .61162 | -1.23760 |
| 12 | .63287 | -1.24479 | -49.070 | .02392 | .64190 | -1.23696 | .62383 | -1.25263 |
| 13 | .64532 | -1.25893 | -48.159 | .02469 | .65452 | -1.25069 | .63612 | -1.26717 |
| 14 | .65778 | -1.27261 | -47.224 | .02533 | .66707 | -1.26401 | .64848 | -1.28121 |
| 15 | .67023 | -1.28585 | -46.266 | .02582 | .67956 | -1.27693 | .66090 | -1.29478 |
| 16 | .68269 | -1.29865 | -45.287 | .02618 | .69199 | -1.28944 | .67338 | -1.30786 |
| 17 | .69514 | -1.31101 | -44.286 | .02641 | .70436 | -1.30156 | .68592 | -1.32047 |
| 18 | .70759 | -1.32295 | -43.267 | .02652 | .71668 | -1.31329 | .69851 | -1.33260 |
| 19 | .72005 | -1.33446 | -42.230 | .02652 | .728?6 | -1.32464 | .71114 | -1.34428 |
| 20 | .73250 | -1.34556 | -41.179 | .02641 | .74120 | -1.33562 | .72381 | -1.35550 |
| 21 | .74496 | -1.35625 | -40.114 | .02619 | .75340 | -1.34624 | .73652 | -1.36627 |
| 22 | .75741 | -1.36655 | -39.040 | .02588 | .76556 | -1.35650 | .74926 | -1.37660 |
| 23 | .76987 | -1.37646 | -37.958 | .02548 | .77770 | -1.36641 | .76203 | -1.38650 |
| 24 | .78232 | -1.38598 | -36.872 | .02498 | .78981 | -1.37599 | .77483 | -1.39598 |
| 25 | .79477 | -1.39514 | -35.786 | .02440 | .80191 | -1.38525 | .78764 | -1.40504 |
| 26 | .80723 | -1.40394 | -34.703 | .02373 | .81398 | -1.39419 | .80047 | -1.41370 |
| 27 | .81968 | -1.41240 | -33.627 | .02299 | .82605 | -1.40283 | .81332 | -1.42197 |
| 28 | .83214 | -1.42051 | -32.563 | .02217 | .83810 | -1.41117 | .82617 | -1.42985 |
| 29 | .84459 | -1.42831 | -31.514 | .02128 | .85015 | -1.41924 | .83903 | -1.43738 |
| 30 | .85705 | -1.43579 | -30.486 | .02031 | .86220 | -1.42704 | .85189 | -1.44454 |
| 31 | .86950 | -1.44298 | -29.482 | .01928 | .87425 | -1.43458 | .86476 | -1.45137 |
| 32 | .88196 | -1.44988 | -28.508 | .01818 | .88629 | -1.44189 | .87762 | -1.45787 |
| 33 | .89441 | -1.45651 | -27.568 | .01702 | .89835 | -1.44837 | .89047 | -1.46405 |
| 34 | .90686 | -1.46289 | -26.667 | .01579 | .91041 | -1.45533 | .90332 | -1.46994 |
| 35 | .91932 | -1.46903 | -25.809 | .01449 | .92247 | -1.46250 | .91616 | -1.47555 |
| 36 | .93177 | -1.47494 | -25.000 | .01314 | .93455 | -1.46839 | .92900 | -1.48089 |
| 37 | .94423 | -1.48065 | -24.245 | .01172 | .94663 | -1.47530 | .94182 | -1.48599 |
| 38 | .95668 | -1.48616 | -23.541 | .01025 | .95873 | -1.48147 | .95464 | -1.49086 |
| 39 | .96914 | -1.49151 | -22.922 | .00871 | .97083 | -1.48750 | .96744 | -1.49552 |
| 40 | .98159 | -1.49669 | -22.280 | .00711 | .98294 | -1.49340 | .98024 | -1.49998 |
| 41 | .99405 | -1.50175 | -22.042 | .00546 | .99507 | -1.49922 | .99302 | -1.50427 |
| 42 | .99751 | -1.50315 | -22.114 | .00499 | .99845 | -1.50084 | .99657 | -1.50546 |

SECTION NUMBER 1   'Z' = 6.5000
••••••••••••••••••••••••••••••

SECTION PROPERTIES

SECTION AREA = 1.2676E-01

LOCATION OF CENTROID      XBAR = 5.0217E-01
RELATIVE TO STACK AXIS    YBAR = -4.4324E-01

SECOND MOMENTS OF AREA    IX = 1.1795E-03
ABOUT CENTROID            IY = 6.6221E-03
                          IXY = -2.4435E-03

PRINCIPAL SECOND MOMENTS  IPX = 2.4345E-04 (AT -20.96 DEGREES TO 'X' AXIS)
OF AREA ABOUT CENTROID    IPY = 7.5582E-03 (AT -20.96 DEGREES TO 'Y' AXIS)

TORSIONAL CONSTANT = 8.2043E-04

SECTION COORDINATES

| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 1 | 3.56243E-02 | -1.25303E-01 | 3.00224E-02 | -1.32730E-01 |
| 2 | 5.16013E-02 | -1.36875E-01 | 4.09467E-02 | -1.50433E-01 |
| 3 | 8.06672E-02 | -1.56918E-01 | 6.13074E-02 | -1.82020E-01 |
| 4 | 1.09200E-01 | -1.75277E-01 | 8.20113E-02 | -2.12576E-01 |
| 5 | 1.37152E-01 | -1.94937E-01 | 1.03062E-01 | -2.42101E-01 |
| 6 | 1.64516E-01 | -2.12901E-01 | 1.24398E-01 | -2.70577E-01 |
| 7 | 1.91245E-01 | -2.30169E-01 | 1.46014E-01 | -2.97997E-01 |
| 8 | 2.17434E-01 | -2.46734E-01 | 1.67967E-01 | -3.24363E-01 |
| 9 | 2.42759E-01 | -2.62601E-01 | 1.89926E-01 | -3.49655E-01 |
| 10 | 2.67967E-01 | -2.77770E-01 | 2.12150E-01 | -3.73873E-01 |
| 11 | 2.92191E-01 | -2.92249E-01 | 2.34496E-01 | -3.96987E-01 |
| 12 | 3.15957E-01 | -3.06042E-01 | 2.56899E-01 | -4.18999E-01 |
| 13 | 3.39233E-01 | -3.19140E-01 | 2.79364E-01 | -4.39885E-01 |
| 14 | 3.62026E-01 | -3.31572E-01 | 3.01939E-01 | -4.59640E-01 |
| 15 | 3.84333E-01 | -3.43341E-01 | 3.24557E-01 | -4.78245E-01 |
| 16 | 4.06345E-01 | -3.54456E-01 | 3.47232E-01 | -4.95672E-01 |
| 17 | 4.27452E-01 | -3.64918E-01 | 3.69943E-01 | -5.11911E-01 |
| 18 | 4.48236E-01 | -3.74753E-01 | 3.92749E-01 | -5.26943E-01 |
| 19 | 4.70293E-01 | -3.83968E-01 | 4.15598E-01 | -5.40742E-01 |
| 20 | 4.91147E-01 | -3.92579E-01 | 4.38516E-01 | -5.53281E-01 |
| 21 | 5.11052E-01 | -4.00599E-01 | 4.61528E-01 | -5.64542E-01 |
| 22 | 5.31461E-01 | -4.04035E-01 | 4.84691E-01 | -5.74500E-01 |
| 23 | 5.53036E-01 | -4.14016E-01 | 5.07962E-01 | -5.83122E-01 |
| 24 | 5.73642E-01 | -4.21255E-01 | 5.31409E-01 | -5.90385E-01 |
| 25 | 5.94351E-01 | -4.27074E-01 | 5.55062E-01 | -5.96264E-01 |
| 26 | 6.15241E-01 | -4.32392E-01 | 5.78970E-01 | -6.00727E-01 |
| 27 | 6.36543E-01 | -4.37228E-01 | 6.03186E-01 | -6.03747E-01 |
| 28 | 6.58031E-01 | -4.41619E-01 | 6.27762E-01 | -6.05305E-01 |
| 29 | 6.80059E-01 | -4.45601E-01 | 6.52739E-01 | -6.05376E-01 |
| 30 | 7.02390E-01 | -4.49218E-01 | 6.78156E-01 | -6.03942E-01 |
| 31 | 7.25275E-01 | -4.52511E-01 | 7.04050E-01 | -6.00997E-01 |
| 32 | 7.42758E-01 | -4.55342E-01 | 7.30442E-01 | -5.96542E-01 |
| 33 | 7.72834E-01 | -4.53346E-01 | 7.57431E-01 | -5.90588E-01 |
| 34 | 7.97745E-01 | -4.61021E-01 | -84998E-01 | -5.83162E-01 |

| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 35 | 8.23667E-01 | -4.63637E-01 | 8.13199E-01 | -5.74310E-01 |
| 36 | 8.49837E-01 | -4.64265E-01 | 8.42049E-01 | -5.64095E-01 |
| 37 | 8.77201E-01 | -4.69061E-01 | 8.71618E-01 | -5.52606E-01 |
| 38 | 9.05338E-01 | -4.72079E-01 | 9.01879E-01 | -5.39961E-01 |
| 39 | 9.34475E-01 | -4.75452E-01 | 9.32838E-01 | -5.26300E-01 |
| 40 | 9.64376E-01 | -4.79306E-01 | 9.64521E-01 | -5.11795E-01 |
| 41 | 9.95136E-01 | -4.83752E-01 | 9.96821E-01 | -4.96641E-01 |
| 42 | 9.94886E-01 | -4.82121E-01 | 9.96029E-01 | -4.92906E-01 |

| POINT NO | XSEMI | YSEMI | XSEMJ | YSEMJ |
|---|---|---|---|---|
| 1 | 3.00224E-02 | -1.32730E-01 | 9.94486E-01 | -4.82121E-01 |
| 2 | 2.95151E-02 | -1.31902E-01 | 9.59965E-01 | -4.82518E-01 |
| 3 | 2.93005E-02 | -1.31504E-01 | 9.56356E-01 | -4.82565E-01 |
| 4 | 2.91147E-02 | -1.31083E-01 | 9.66741E-01 | -4.82651E-01 |
| 5 | 2.89715E-02 | -1.30643E-01 | 9.97119E-01 | -4.82776E-01 |
| 6 | 2.86601E-02 | -1.30188E-01 | 9.97485E-01 | -4.82939E-01 |
| 7 | 2.87858E-02 | -1.29722E-01 | 9.97837E-01 | -4.83137E-01 |
| 8 | 2.87433E-02 | -1.29250E-01 | 9.98163E-01 | -4.83375E-01 |
| 9 | 2.87508E-02 | -1.24775E-01 | 9.94471E-01 | -4.83646E-01 |
| 10 | 2.87905E-02 | -1.28303E-01 | 9.90763E-01 | -4.83951E-01 |
| 11 | 2.83679E-02 | -1.27838E-01 | 9.90038E-01 | -4.84286E-01 |
| 12 | 2.69323E-02 | -1.27384E-01 | 9.99286E-01 | -4.84651E-01 |
| 13 | 2.91327E-02 | -1.26945E-01 | 9.95043E-01 | -4.85043E-01 |
| 14 | 2.93177E-02 | -1.26527E-01 | 9.95690E-01 | -4.85459E-01 |
| 15 | 2.95357E-02 | -1.26131E-01 | 9.99843E-01 | -4.85896E-01 |
| 16 | 2.97976E-02 | -1.25764E-01 | 9.99961E-01 | -4.86352E-01 |
| 17 | 3.00624E-02 | -1.25427E-01 | 1.00004E+00 | -4.86823E-01 |
| 18 | 3.03661E-02 | -1.25124E-01 | 1.00008E+00 | -4.87305E-01 |
| 19 | 3.06932E-02 | -1.24858E-01 | 1.00010E+00 | -4.87794E-01 |
| 20 | 3.10416E-02 | -1.24631E-01 | 1.00008E+00 | -4.88288E-01 |
| 21 | 3.14051E-02 | -1.24446E-01 | 1.00001E+00 | -4.88782E-01 |
| 22 | 3.17834E-02 | -1.24305E-01 | 9.99903E-01 | -4.89272E-01 |
| 23 | 3.21719E-02 | -1.24208E-01 | 9.99753E-01 | -4.89754E-01 |
| 24 | 3.25671E-02 | -1.24157E-01 | 9.95564E-01 | -4.90224E-01 |
| 25 | 3.29653E-02 | -1.24153E-01 | 9.99337E-01 | -4.90678E-01 |
| 26 | 3.33628E-02 | -1.24194E-01 | 9.99073E-01 | -4.91113E-01 |
| 27 | 3.37560E-02 | -1.24282E-01 | 9.98773E-01 | -4.91523E-01 |
| 28 | 3.41411E-02 | -1.24416E-01 | 9.98440E-01 | -4.91905E-01 |
| 29 | 3.45147E-02 | -1.24593E-01 | 9.98075E-01 | -4.92256E-01 |
| 30 | 3.48731E-02 | -1.24813E-01 | 9.97681E-01 | -4.92571E-01 |
| 31 | 3.56245E-02 | -1.25393E-01 | 9.96029E-01 | -4.92906E-01 |

SECTION NUMBER 2    'Z' = 6.7500
**************************************

SECTION PROPERTIES

| | | |
|---|---|---|
| SECTION AREA | = | 1.14558E-01 |
| LOCATION OF CENTROID | XBAP = | 4.9786E-01 |
| RELATIVE TO STACK AXIS | YBAP = | -4.7365E-01 |
| SECOND MOMENTS OF AREA | IX = | 1.3977E-03 |
| ABOUT CENTROID | IY = | 6.0809E-03 |
| | IXY = | -2.6790E-03 |
| PRINCIPAL SECOND MOMENTS | IPX = | 1.3116E-04  (AT -24.42 DEGREES TO 'X' AXIS) |
| OF AREA ABOUT CENTROID | IPY = | 7.2974E-03  (AT -24.42 DEGREES TO 'Y' AXIS) |

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SECTION COORDINATES

| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 1 | 3.02707E-02 | -1.34468E-01 | 2.42437E-02 | -1.38572E-01 |
| 2 | 4.55824E-02 | -1.43375E-01 | 3.50210E-02 | -1.55818E-01 |
| 3 | 7.43211E-02 | -1.65123E-01 | 5.57643E-02 | -1.87623E-01 |
| 4 | 1.02602E-01 | -1.86189E-01 | 7.66355E-02 | -2.18419E-01 |
| 5 | 1.30305E-01 | -2.05555E-01 | 9.82403E-02 | -2.48231E-01 |
| 6 | 1.57699E-01 | -2.26227E-01 | 1.19931E-01 | -2.77035E-01 |
| 7 | 1.84439E-01 | -2.45203E-01 | 1.41899E-01 | -3.04829E-01 |
| 8 | 2.10542E-01 | -2.63684E-01 | 1.64111E-01 | -3.31608E-01 |
| 9 | 2.34415E-01 | -2.81067E-01 | 1.86540E-01 | -3.57362E-01 |
| 10 | 2.61616E-01 | -2.97960E-01 | 2.09152E-01 | -3.82083E-01 |
| 11 | 2.86322E-01 | -3.14169E-01 | 2.31912E-01 | -4.05755E-01 |
| 12 | 3.10563E-01 | -3.29697E-01 | 2.54769E-01 | -4.28375E-01 |
| 13 | 3.34368E-01 | -3.44541E-01 | 2.77737E-01 | -4.49933E-01 |
| 14 | 3.57769E-01 | -3.57724E-01 | 3.00806E-01 | -4.70417E-01 |
| 15 | 3.80737E-01 | -3.72252E-01 | 3.23966E-01 | -4.89813E-01 |
| 16 | 4.03435E-01 | -3.85136E-01 | 3.47211E-01 | -5.08103E-01 |
| 17 | 4.25867E-01 | -3.97376E-01 | 3.70537E-01 | -5.25279E-01 |
| 18 | 4.47972E-01 | -4.08908E-01 | 3.93942E-01 | -5.41326E-01 |
| 19 | 4.69875E-01 | -4.20010E-01 | 4.17427E-01 | -5.56226E-01 |
| 20 | 4.91600E-01 | -4.30628E-01 | 4.40998E-01 | -5.69958E-01 |
| 21 | 5.13185E-01 | -4.40266E-01 | 4.64649E-01 | -5.82512E-01 |
| 22 | 5.34693E-01 | -4.49533E-01 | 4.88483E-01 | -5.93862E-01 |
| 23 | 5.56148E-01 | -4.58255E-01 | 5.12401E-01 | -6.04001E-01 |
| 24 | 5.77622E-01 | -4.66449E-01 | 5.36487E-01 | -6.12899E-01 |
| 25 | 5.99170E-01 | -4.74133E-01 | 5.60748E-01 | -6.20542E-01 |
| 26 | 6.20826E-01 | -4.81330E-01 | 5.85225E-01 | -6.26909E-01 |
| 27 | 6.42558E-01 | -4.88058E-01 | 6.09958E-01 | -6.31982E-01 |
| 28 | 6.65049E-01 | -4.94349E-01 | 6.34964E-01 | -6.35750E-01 |
| 29 | 6.87542E-01 | -5.00238E-01 | 6.60332E-01 | -6.38198E-01 |
| 30 | 7.10390E-01 | -5.05761E-01 | 6.86031E-01 | -6.39312E-01 |
| 31 | 7.33649E-01 | -5.10966E-01 | 7.12108E-01 | -6.39097E-01 |
| 32 | 7.57372E-01 | -5.15874E-01 | 7.38590E-01 | -6.37557E-01 |
| 33 | 7.81612E-01 | -5.20561E-01 | 7.65510E-01 | -6.34701E-01 |
| 34 | 8.06418E-01 | -5.25080E-01 | 7.92896E-01 | -6.30559E-01 |
| 35 | 8.31936E-01 | -5.29499E-01 | 8.20775E-01 | -6.25172E-01 |
| 36 | 8.57903E-01 | -5.33894E-01 | 8.49172E-01 | -6.18594E-01 |
| 37 | 8.84722E-01 | -5.38346E-01 | 8.78106E-01 | -6.10899E-01 |
| 38 | 9.12181E-01 | -5.42960E-01 | 9.07591E-01 | -6.02085E-01 |
| 39 | 9.40338E-01 | -5.47799E-01 | 9.37620E-01 | -5.92571E-01 |
| 40 | 9.68147E-01 | -5.52998E-01 | 9.68217E-01 | -5.82194E-01 |
| 41 | 9.93643E-01 | -5.58639E-01 | 9.92935E-01 | -5.71210E-01 |
| 42 | 9.99453E-01 | -5.57884E-01 | 1.00008E+00 | -5.68477E-01 |

| POINT NO | XSEMI | YSEMI | XSEMJ | YSEMJ |
|---|---|---|---|---|
| 1 | 2.42432E-02 | -1.35573E-01 | 9.99453E-01 | -5.57884E-01 |
| 2 | 2.37918E-02 | -1.37841E-01 | 1.00072E+00 | -5.58246E-01 |
| 3 | 2.35673E-02 | -1.37433E-01 | 1.00113E+00 | -5.58323E-01 |
| 4 | 2.33747E-02 | -1.37000E-01 | 1.00152E+00 | -5.58447E-01 |
| 5 | 2.32250E-02 | -1.36548E-01 | 1.00190E+00 | -5.58611E-01 |
| 6 | 2.31166E-02 | -1.35082E-01 | 1.00227E+00 | -5.58814E-01 |
| 7 | 2.30457E-02 | -1.35604E-01 | 1.00262E+00 | -5.59055E-01 |
| 8 | 2.30159E-02 | -1.35121E-01 | 1.00294E+00 | -5.59332E-01 |
| 9 | 2.30275E-02 | -1.34636E-01 | 1.00324E+00 | -5.59643E-01 |

| POINT NO | XSEMI | YSEMI | XSEMJ | YSEMJ |
|---|---|---|---|---|
| 10 | 2.30205E-02 | -1.34156E-01 | 1.00351E+00 | -5.59986E-01 |
| 11 | 2.31743E-02 | -1.33683E-01 | 1.00376E+00 | -5.60357E-01 |
| 12 | 2.33079E-02 | -1.33224E-01 | 1.00397E+00 | -5.60754E-01 |
| 13 | 2.34802E-02 | -1.32782E-01 | 1.00415E+00 | -5.61172E-01 |
| 14 | 2.36834E-02 | -1.32362E-01 | 1.00430E+00 | -5.61615E-01 |
| 15 | 2.39335E-02 | -1.31965E-01 | 1.00441E+00 | -5.62071E-01 |
| 16 | 2.42101E-02 | -1.31603E-01 | 1.00447E+00 | -5.62540E-01 |
| 17 | 2.45166E-02 | -1.31272E-01 | 1.00450E+00 | -5.63018E-01 |
| 18 | 2.48500E-02 | -1.30978E-01 | 1.00449E+00 | -5.63501E-01 |
| 19 | 2.52069E-02 | -1.30723E-01 | 1.00445E+00 | -5.63988E-01 |
| 20 | 2.55840E-02 | -1.30510E-01 | 1.00437E+00 | -5.64465E-01 |
| 21 | 2.59776E-02 | -1.30341E-01 | 1.00424E+00 | -5.64933E-01 |
| 22 | 2.63839E-02 | -1.30218E-01 | 1.00407E+00 | -5.65400E-01 |
| 23 | 2.67995E-02 | -1.30143E-01 | 1.00386E+00 | -5.65847E-01 |
| 24 | 2.72185E-02 | -1.30114E-01 | 1.00362E+00 | -5.66277E-01 |
| 25 | 2.76388E-02 | -1.30134E-01 | 1.00334E+00 | -5.66681E-01 |
| 26 | 2.80556E-02 | -1.30202E-01 | 1.00303E+00 | -5.67058E-01 |
| 27 | 2.84649E-02 | -1.30317E-01 | 1.00269E+00 | -5.67405E-01 |
| 28 | 2.88626E-02 | -1.30479E-01 | 1.00232E+00 | -5.67720E-01 |
| 29 | 2.92450E-02 | -1.30684E-01 | 1.00192E+00 | -5.67997E-01 |
| 30 | 2.96103E-02 | -1.30933E-01 | 1.00150E+00 | -5.68235E-01 |
| 31 | 3.02707E-02 | -1.31468E-01 | 1.00008E+00 | -5.68477E-01 |

SECTION NUMBER 3 'Z' = 7.0000
**********************************

SECTION PROPERTIES

| | | |
|---|---|---|
| SECTION AREA | = | 1.0209E-01 |
| LOCATION OF CENTROID RELATIVE TO STACK AXIS | XBAR = YBAR = | 4.9344E-01 -5.0295E-01 |
| SECOND MOMENTS OF AREA ABOUT CENTROID | IX = IY = IXY = | 1.5949E-03 5.5250E-03 -2.6096E-03 |
| PRINCIPAL SECOND MOMENTS OF AREA ABOUT CENTROID | IPX = IPY = | 1.3200E-04 (AT -27.51 DEGREES TO 'X' AXIS) 6.9909E-03 (AT -27.51 DEGREES TO 'Y' AXIS) |
| TORSIONAL CONSTANT | = | 3.8388E-04 |

SECTION COORDINATES

| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 1 | 2.49164E-02 | -1.37542E-01 | 1.84641E-02 | -1.44415E-01 |
| 2 | 3.95636E-02 | -1.49874E-01 | 2.90953E-02 | -1.61204E-01 |
| 3 | 6.79750E-02 | -1.73328E-01 | 5.02212E-02 | -1.93218E-01 |
| 4 | 9.60049E-02 | -1.95100E-01 | 7.16593E-02 | -2.24262E-01 |
| 5 | 1.23618E-01 | -2.19172E-01 | 9.34191E-02 | -2.54361E-01 |
| 6 | 1.50819E-01 | -2.39552E-01 | 1.15464E-01 | -2.83494E-01 |
| 7 | 1.77597E-01 | -2.60236E-01 | 1.37784E-01 | -3.11660E-01 |
| 8 | 2.03950E-01 | -2.82231E-01 | 1.60355E-01 | -3.38852E-01 |
| 9 | 2.25670E-01 | -2.99534E-01 | 1.83154E-01 | -3.65066E-01 |
| 10 | 2.55365E-01 | -3.19150E-01 | 2.06155E-01 | -3.90294E-01 |
| 11 | 2.80454E-01 | -3.36087E-01 | 2.29329E-01 | -4.14524E-01 |

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| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 12 | 3.05155E-01 | -3.53351E-01 | 2.52639E-01 | -4.37756E-01 |
| 13 | 3.29503E-01 | -3.69942E-01 | 2.76091E-01 | -4.59952E-01 |
| 14 | 3.55512E-01 | -3.85476E-01 | 2.99672E-01 | -4.81194E-01 |
| 15 | 3.77211E-01 | -4.01164E-01 | 3.23375E-01 | -5.01382E-01 |
| 16 | 4.00625E-01 | -4.15815E-01 | 3.47189E-01 | -5.20534E-01 |
| 17 | 4.23742E-01 | -4.29835E-01 | 3.71111E-01 | -5.38642E-01 |
| 18 | 4.46707E-01 | -4.43243E-01 | 3.95134E-01 | -5.55709E-01 |
| 19 | 4.69458E-01 | -4.56052E-01 | 4.19257E-01 | -5.71710E-01 |
| 20 | 4.92052E-01 | -4.63277E-01 | 4.43480E-01 | -5.86636E-01 |
| 21 | 5.14525E-01 | -4.79933E-01 | 4.67811E-01 | -6.00482E-01 |
| 22 | 5.36914E-01 | -4.91031E-01 | 4.92275E-01 | -6.13235E-01 |
| 23 | 5.59259E-01 | -5.01595E-01 | 5.16850E-01 | -6.24681E-01 |
| 24 | 5.81632E-01 | -5.11643E-01 | 5.41565E-01 | -6.35412E-01 |
| 25 | 6.03930E-01 | -5.21193E-01 | 5.66434E-01 | -6.44820E-01 |
| 26 | 6.26471E-01 | -5.30269E-01 | 5.91480E-01 | -6.53091E-01 |
| 27 | 6.49174E-01 | -5.38989E-01 | 6.16724E-01 | -6.60217E-01 |
| 28 | 6.72017E-01 | -5.47080E-01 | 6.42205E-01 | -6.66195E-01 |
| 29 | 6.95079E-01 | -5.54874E-01 | 6.67926E-01 | -6.72019E-01 |
| 30 | 7.18400E-01 | -5.62305E-01 | 6.93907E-01 | -6.74683E-01 |
| 31 | 7.42022E-01 | -5.69405E-01 | 7.20165E-01 | -6.77197E-01 |
| 32 | 7.65916E-01 | -5.75214E-01 | 7.46719E-01 | -6.77857E-01 |
| 33 | 7.90330E-01 | -5.82775E-01 | 7.73589E-01 | -6.78814E-01 |
| 34 | 8.15032E-01 | -5.87139E-01 | 8.00793E-01 | -6.77957E-01 |
| 35 | 8.40306E-01 | -5.95361E-01 | 8.28351E-01 | -6.76035E-01 |
| 36 | 8.65998E-01 | -6.01504E-01 | 8.56281E-01 | -6.73093E-01 |
| 37 | 8.92243E-01 | -6.07632E-01 | 8.84593E-01 | -6.69192E-01 |
| 38 | 9.18964E-01 | -6.13821E-01 | 9.13302E-01 | -6.64411E-01 |
| 39 | 9.46202E-01 | -6.21146E-01 | 9.42401E-01 | -6.58642E-01 |
| 40 | 9.73918E-01 | -6.26591E-01 | 9.71914E-01 | -6.52594E-01 |
| 41 | 1.00215E+00 | -6.33525E-01 | 1.00176E+00 | -6.45778E-01 |
| 42 | 1.00442E+00 | -6.33647E-01 | 1.00413E+00 | -6.44049E-01 |

| POINT NU | XSEMI | YSEMI | XSEMJ | YSEMJ |
|---|---|---|---|---|
| 1 | 1.84641E-02 | -1.44415E-01 | 1.00442E+00 | -6.33647E-01 |
| 2 | 1.80695E-02 | -1.43781E-01 | 1.00547E+00 | -6.33961E-01 |
| 3 | 1.78340E-02 | -1.43361E-01 | 1.00589E+00 | -6.34080E-01 |
| 4 | 1.76347E-02 | -1.42917E-01 | 1.00630E+00 | -6.34242E-01 |
| 5 | 1.74945E-02 | -1.42454E-01 | 1.00569E+00 | -6.34446E-01 |
| 6 | 1.73711E-02 | -1.41975E-01 | 1.00706E+00 | -6.34690E-01 |
| 7 | 1.73055E-02 | -1.41466E-01 | 1.00740E+00 | -6.34972E-01 |
| 8 | 1.72825E-02 | -1.40992E-01 | 1.00772E+00 | -6.35289E-01 |
| 9 | 1.73042E-02 | -1.40498E-01 | 1.00800E+00 | -6.35640E-01 |
| 10 | 1.73705E-02 | -1.40008E-01 | 1.00825E+00 | -6.36020E-01 |
| 11 | 1.74807E-02 | -1.39529E-01 | 1.00847E+00 | -6.36427E-01 |
| 12 | 1.76336E-02 | -1.39054E-01 | 1.00866E+00 | -6.36857E-01 |
| 13 | 1.79277E-02 | -1.38619E-01 | 1.00880E+00 | -6.37306E-01 |
| 14 | 1.80611E-02 | -1.33197E-01 | 1.00891E+00 | -6.37771E-01 |
| 15 | 1.83313E-02 | -1.37804E-01 | 1.00897E+00 | -6.38246E-01 |
| 16 | 1.86356E-02 | -1.37443E-01 | 1.00899E+00 | -6.38729E-01 |
| 17 | 1.89709E-02 | -1.37116E-01 | 1.00896E+00 | -6.39214E-01 |
| 18 | 1.93338E-02 | -1.36832E-01 | 1.00890E+00 | -6.39698E-01 |
| 19 | 1.97206E-02 | -1.36588E-01 | 1.00879E+00 | -6.40175E-01 |
| 20 | 2.01275E-02 | -1.36389E-01 | 1.00865E+00 | -6.40642E-01 |
| 21 | 2.05501E-02 | -1.36237E-01 | 1.00847E+00 | -6.41095E-01 |
| 22 | 2.05844E-02 | -1.36132E-01 | 1.00624E+00 | -6.41529E-01 |
| 23 | 2.14258E-02 | -1.36077E-01 | 1.00797E+00 | -6.41941E-01 |

| POINT NO | XSEMI | YSEMI | XSEMJ | YSEMJ |
|---|---|---|---|---|
| 24 | 2.16700E-02 | -1.36072E-01 | 1.00768E+00 | -5.42332E-01 |
| 25 | 2.23123E-02 | -1.36116E-01 | 1.00735E+00 | -6.42661E-01 |
| 26 | 2.27444E-02 | -1.35210E-01 | 1.00699E+00 | -5.43003E-01 |
| 27 | 2.31737E-02 | -1.33352E-01 | 1.00660E+00 | -6.43288E-01 |
| 28 | 2.35841E-02 | -1.36541E-01 | 1.00619E+00 | -6.43534E-01 |
| 29 | 2.39753E-02 | -1.36776E-01 | 1.00577E+00 | -6.43739E-01 |
| 30 | 2.43434E-02 | -1.37053E-01 | 1.00532E+00 | -6.43899E-01 |
| 31 | 2.49164E-02 | -1.37542E-01 | 1.00413E+00 | -5.44049E-01 |

## SECTION NUMBER 4 'Z' = 7.2500
*************************************

SECTION PROPERTIES

SECTION AREA = 8.9181E-02

LOCATION OF CENTROID    XBAR = 4.8044E-01
RELATIVE TO STACK AXIS  YBAR = -5.3089E-01

SECOND MOMENTS OF AREA  IX = 1.7477E-03
ABOUT CENTROID          IY = 4.9523E-03
                        IXY = -2.8344E-03

PRINCIPAL SECOND MOMENTS  IPX = 9.4043E-05 (AT -30.26 DEGREES TO 'X' AXIS)
OF AREA ABOUT CENTROID    IPY = 6.6059E-03 (AT -30.26 DEGREES TO 'Y' AXIS)

TORSIONAL CONSTANT        = 2.3833E-04

SECTION COORDINATES

| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 1 | 1.95900E-02 | -1.43600E-01 | 1.27165E-02 | -1.50239E-01 |
| 2 | 2.35672E-02 | -1.56350E-01 | 2.31969E-02 | -1.66574E-01 |
| 3 | 5.16418E-02 | -1.81525E-01 | 4.46975E-02 | -1.98802E-01 |
| 4 | 9.94136E-02 | -2.06007E-01 | 6.64961E-02 | -2.30099E-01 |
| 5 | 1.16854E-01 | -2.29707E-01 | 8.86056E-02 | -2.60488E-01 |
| 6 | 1.43371E-01 | -2.52876E-01 | 1.11001E-01 | -2.89952E-01 |
| 7 | 1.70755E-01 | -2.75270E-01 | 1.33671E-01 | -3.18490E-01 |
| 8 | 1.97208E-01 | -2.96977E-01 | 1.56603E-01 | -3.46098E-01 |
| 9 | 2.23326E-01 | -3.18000E-01 | 1.79768E-01 | -3.72771E-01 |
| 10 | 2.49114E-01 | -3.38340E-01 | 2.03157E-01 | -3.98504E-01 |
| 11 | 2.74545E-01 | -3.58006E-01 | 2.26745E-01 | -4.23293E-01 |
| 12 | 2.99754E-01 | -3.77006E-01 | 2.50513E-01 | -4.47136E-01 |
| 13 | 3.24639E-01 | -3.95342E-01 | 2.74445E-01 | -4.70030E-01 |
| 14 | 3.49256E-01 | -4.13028E-01 | 2.98539E-01 | -4.91970E-01 |
| 15 | 3.73625E-01 | -4.30075E-01 | 3.22784E-01 | -5.12950E-01 |
| 16 | 3.97655E-01 | -4.46494E-01 | 3.47168E-01 | -5.32965E-01 |
| 17 | 4.21697E-01 | -4.62293E-01 | 3.71684E-01 | -5.52014E-01 |
| 18 | 4.45443E-01 | -4.77488E-01 | 3.96326E-01 | -5.70092E-01 |
| 19 | 4.69040E-01 | -4.92094E-01 | 4.21087E-01 | -5.87194E-01 |
| 20 | 4.92504E-01 | -5.06126E-01 | 4.45962E-01 | -6.03314E-01 |
| 21 | 5.15852E-01 | -5.19598E-01 | 4.70952E-01 | -6.18451E-01 |
| 22 | 5.39141E-01 | -5.32529E-01 | 4.96067E-01 | -6.32603E-01 |
| 23 | 5.62371E-01 | -5.44935E-01 | 5.21294E-01 | -6.45760E-01 |
| 24 | 5.85532E-01 | -5.56836E-01 | 5.46643E-01 | -6.57926E-01 |
| 25 | 6.08639E-01 | -5.68253E-01 | 5.72120E-01 | -6.69097E-01 |

## POINT NO

| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 26 | 6.32047E-01 | -5.79207E-01 | 5.97735E-01 | -6.79272E-01 |
| 27 | 6.55430E-01 | -5.89718E-01 | 6.23501E-01 | -6.84452E-01 |
| 28 | 6.78995E-01 | -5.99810E-01 | 6.49427E-01 | -6.96640E-01 |
| 29 | 7.02616E-01 | -6.09511E-01 | 6.75519E-01 | -7.03840E-01 |
| 30 | 7.26410E-01 | -6.18849E-01 | 7.01762E-01 | -7.10054E-01 |
| 31 | 7.50396E-01 | -6.27853E-01 | 7.28223E-01 | -7.15298E-01 |
| 32 | 7.74630E-01 | -6.35554E-01 | 7.54848E-01 | -7.19563E-01 |
| 33 | 7.95048E-01 | -6.44990E-01 | 7.81668E-01 | -7.22927E-01 |
| 34 | 8.23766E-01 | -6.53198E-01 | 8.08691E-01 | -7.25355E-01 |
| 35 | 8.48775E-01 | -6.61223E-01 | 8.35928E-01 | -7.26897E-01 |
| 36 | 8.74034E-01 | -6.69113E-01 | 8.63389E-01 | -7.27592E-01 |
| 37 | 8.95764E-01 | -6.76917E-01 | 8.91081E-01 | -7.27485E-01 |
| 38 | 9.25747E-01 | -6.84691E-01 | 9.19044E-01 | -7.26637E-01 |
| 39 | 9.52065E-01 | -6.92494E-01 | 9.47182E-01 | -7.25112E-01 |
| 40 | 9.76655E-01 | -7.00383E-01 | 9.75610E-01 | -7.22993E-01 |
| 41 | 1.00566E+00 | -7.03412E-01 | 1.00424E+00 | -7.20347E-01 |
| 42 | 1.00938E+00 | -7.09410E-01 | 1.00818E+00 | -7.19620E-01 |

| POINT NO | XSEMI | YSEMI | XSEMJ | YSEMJ |
|---|---|---|---|---|
| 1 | 1.27165E-02 | -1.50239E-01 | 1.00938E+00 | -7.09410E-01 |
| 2 | 1.23759E-02 | -1.49702E-01 | 1.01023E+00 | -7.09663E-01 |
| 3 | 1.21326E-02 | -1.43271E-01 | 1.01066E+00 | -7.09837E-01 |
| 4 | 1.19306E-02 | -1.48815E-01 | 1.01108E+00 | -7.10037E-01 |
| 5 | 1.17731E-02 | -1.48340E-01 | 1.01148E+00 | -7.10281E-01 |
| 6 | 1.16616E-02 | -1.47849E-01 | 1.01185E+00 | -7.10565E-01 |
| 7 | 1.15974E-02 | -1.47349E-01 | 1.01219E+00 | -7.10888E-01 |
| 8 | 1.15811E-02 | -1.46844E-01 | 1.01249E+00 | -7.11247E-01 |
| 9 | 1.16129E-02 | -1.46340E-01 | 1.01276E+00 | -7.11637E-01 |
| 10 | 1.16925E-02 | -1.45842E-01 | 1.03000E+00 | -7.12055E-01 |
| 11 | 1.18190E-02 | -1.45355E-01 | 1.03319E+00 | -7.12498E-01 |
| 12 | 1.19911E-02 | -1.44885E-01 | 1.03334E+00 | -7.12960E-01 |
| 13 | 1.22059E-02 | -1.44436E-01 | 1.03345E+00 | -7.13430E-01 |
| 14 | 1.24643E-02 | -1.44014E-01 | 1.03351E+00 | -7.13926E-01 |
| 15 | 1.27604E-02 | -1.43622E-01 | 1.03353E+00 | -7.14421E-01 |
| 16 | 1.30922E-02 | -1.43264E-01 | 1.03350E+00 | -7.14917E-01 |
| 17 | 1.34561E-02 | -1.42945E-01 | 1.03342E+00 | -7.15410E-01 |
| 18 | 1.38444E-02 | -1.42660E-01 | 1.03330E+00 | -7.15894E-01 |
| 19 | 1.42649E-02 | -1.42436E-01 | 1.01314E+00 | -7.16366E-01 |
| 20 | 1.47012E-02 | -1.42250E-01 | 1.01294E+00 | -7.16820E-01 |
| 21 | 1.51527E-02 | -1.42114E-01 | 1.01269E+00 | -7.17252E-01 |
| 22 | 1.56117E-02 | -1.42028E-01 | 1.01241E+00 | -7.17658E-01 |
| 23 | 1.60864E-02 | -1.41994E-01 | 1.01209E+00 | -7.18034E-01 |
| 24 | 1.65507E-02 | -1.42011E-01 | 1.01173E+00 | -7.18377E-01 |
| 25 | 1.70149E-02 | -1.42081E-01 | 1.01135E+00 | -7.18682E-01 |
| 26 | 1.74700E-02 | -1.42200E-01 | 1.01094E+00 | -7.18948E-01 |
| 27 | 1.79112E-02 | -1.42370E-01 | 1.01052E+00 | -7.19171E-01 |
| 28 | 1.83340E-02 | -1.42587E-01 | 1.01007E+00 | -7.19349E-01 |
| 29 | 1.87339E-02 | -1.42850E-01 | 1.00961E+00 | -7.19480E-01 |
| 30 | 1.91056E-02 | -1.43156E-01 | 1.00914E+00 | -7.19563E-01 |
| 31 | 1.95990E-02 | -1.43600E-01 | 1.00818E+00 | -7.19620E-01 |

SECTION NUMBER 5   'Z' = 7.5000
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SECTION PROPERTIES

SECTION AREA = 7.5806E-02

LOCATION OF CENTROID     XBAR = 4.3256E-01
RELATIVE TO STACK AXIS   YBAR = -5.5657E-01

SECOND MOMENTS OF AREA   IX = 1.8436E-03
ABOUT CENTROID           IY = 4.3193E-03
                         IXY = -2.7488E-03

PRINCIPAL SECOND MOMENTS   IPX = 6.8868E-05 (AT -32.88 DEGREES TO 'X' AXIS)
OF AREA ABOUT CENTROID     IPY = 6.0961E-03 (AT -32.69 DEGREES TO 'Y' AXIS)

TORSIONAL CONSTANT = 1.3524E-04

SECTION COORDINATES

| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 1 | 1.65397E-02 | -1.48087E-01 | 9.71714E-03 | -1.54477E-01 |
| 2 | 2.02166E-02 | -1.61244E-01 | 2.00129E-02 | -1.70436E-01 |
| 3 | 5.75110E-02 | -1.83112E-01 | 4.17972E-02 | -2.03000E-01 |
| 4 | 9.51587E-02 | -2.14319E-01 | 6.38556E-02 | -2.34665E-01 |
| 5 | 1.12240E-01 | -2.39841E-01 | 8.62048E-02 | -2.65453E-01 |
| 6 | 1.39069E-01 | -2.64690E-01 | 1.08823E-01 | -2.95352E-01 |
| 7 | 1.65646E-01 | -2.88857E-01 | 1.31704E-01 | -3.24362E-01 |
| 8 | 1.91977E-01 | -3.12352E-01 | 1.54836E-01 | -3.52479E-01 |
| 9 | 2.18066E-01 | -3.35175E-01 | 1.78208E-01 | -3.79701E-01 |
| 10 | 2.43923E-01 | -3.57327E-01 | 2.01809E-01 | -4.06024E-01 |
| 11 | 2.69559E-01 | -3.78814E-01 | 2.25626E-01 | -4.31450E-01 |
| 12 | 2.94998E-01 | -3.96642E-01 | 2.49649E-01 | -4.55978E-01 |
| 13 | 3.20223E-01 | -4.19817E-01 | 2.73870E-01 | -4.79607E-01 |
| 14 | 3.45280E-01 | -4.39345E-01 | 2.98282E-01 | -5.02336E-01 |
| 15 | 3.70172E-01 | -4.58238E-01 | 3.22879E-01 | -5.24165E-01 |
| 16 | 3.94914E-01 | -4.76508E-01 | 3.47652E-01 | -5.45093E-01 |
| 17 | 4.19519E-01 | -4.94166E-01 | 3.72597E-01 | -5.65123E-01 |
| 18 | 4.44007E-01 | -5.11222E-01 | 3.97706E-01 | -5.84255E-01 |
| 19 | 4.68395E-01 | -5.27694E-01 | 4.22972E-01 | -6.02490E-01 |
| 20 | 4.92694E-01 | -5.43597E-01 | 4.48389E-01 | -6.19832E-01 |
| 21 | 5.16920E-01 | -5.58947E-01 | 4.73951E-01 | -6.36286E-01 |
| 22 | 5.41091E-01 | -5.73760E-01 | 4.99653E-01 | -6.51855E-01 |
| 23 | 5.65220E-01 | -5.83055E-01 | 5.25490E-01 | -6.66542E-01 |
| 24 | 5.89326E-01 | -6.01853E-01 | 5.51455E-01 | -6.80356E-01 |
| 25 | 6.13423E-01 | -6.15173E-01 | 5.77540E-01 | -6.93304E-01 |
| 26 | 6.37530E-01 | -6.28037E-01 | 6.03742E-01 | -7.05394E-01 |
| 27 | 6.61667E-01 | -6.40466E-01 | 6.30052E-01 | -7.16636E-01 |
| 28 | 6.85847E-01 | -6.52481E-01 | 6.56463E-01 | -7.27043E-01 |
| 29 | 7.10075E-01 | -6.64106E-01 | 6.82963E-01 | -7.36627E-01 |
| 30 | 7.34367E-01 | -6.75365E-01 | 7.09545E-01 | -7.45395E-01 |
| 31 | 7.52735E-01 | -6.86282E-01 | 7.36200E-01 | -7.53378E-01 |
| 32 | 7.83194E-01 | -6.96885E-01 | 7.62924E-01 | -7.60583E-01 |
| 33 | 8.07757E-01 | -7.07199E-01 | 7.89715E-01 | -7.67032E-01 |
| 34 | 8.32436E-01 | -7.17255E-01 | 8.16572E-01 | -7.72748E-01 |
| 35 | 8.57244E-01 | -7.27085E-01 | 8.43498E-01 | -7.77757E-01 |

| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 36 | 9.42149E-01 | -7.36722E-01 | 8.70495E-01 | -7.82090E-01 |
| 37 | 9.07205E-01 | -7.42202E-01 | 8.97568E-01 | -7.85778E-01 |
| 38 | 8.82530E-01 | -7.55562E-01 | 9.24725E-01 | -7.88622E-02 |
| 39 | 8.57229E-01 | -7.64641E-01 | 9.51964E-01 | -7.91383E-01 |
| 40 | 8.83459E-01 | -7.74076E-01 | 9.79307E-01 | -7.93392E-01 |
| 41 | 1.00816E+00 | -7.83298E-01 | 1.00671E+00 | -7.94916E-01 |
| 42 | 1.01435E+00 | -7.85173E-01 | 1.01223E+00 | -7.95191E-01 |

| POINT NO | XSEMI | YSEMI | XSEMJ | YSEMJ |
|---|---|---|---|---|
| 1 | 9.71714E-03 | -1.54477E-01 | 1.01435E+00 | -7.85173E-01 |
| 2 | 9.42137E-03 | -1.54028E-01 | 1.01498E+00 | -7.85404E-01 |
| 3 | 9.17939E-03 | -1.53587E-01 | 1.01543E+00 | -7.85595E-01 |
| 4 | 8.97240E-03 | -1.53120E-01 | 1.01586E+00 | -7.85835E-01 |
| 5 | 8.81265E-03 | -1.52633E-01 | 1.01626E+00 | -7.86113E-01 |
| 6 | 8.70200E-03 | -1.52132E-01 | 1.01664E+00 | -7.86441E-01 |
| 7 | 8.64145E-03 | -1.51622E-01 | 1.01697E+00 | -7.86805E-01 |
| 8 | 8.63169E-03 | -1.51108E-01 | 1.01727E+00 | -7.87204E-01 |
| 9 | 8.67222E-03 | -1.50595E-01 | 1.01753E+00 | -7.87634E-01 |
| 10 | 8.76439E-03 | -1.50091E-01 | 1.01774E+00 | -7.88090E-01 |
| 11 | 8.90566E-03 | -1.49599E-01 | 1.01791E+00 | -7.88566E-01 |
| 12 | 9.09466E-03 | -1.49125E-01 | 1.01803E+00 | -7.89062E-01 |
| 13 | 9.32956E-03 | -1.48675E-01 | 1.01810E+00 | -7.89566E-01 |
| 14 | 9.66730E-03 | -1.48253E-01 | 1.01812E+00 | -7.90080E-01 |
| 15 | 9.92658E-03 | -1.47864E-01 | 1.01809E+00 | -7.90596E-01 |
| 16 | 1.02821E-02 | -1.47512E-01 | 1.01801E+00 | -7.91105E-01 |
| 17 | 1.06707E-02 | -1.47200E-01 | 1.01789E+00 | -7.91605E-01 |
| 18 | 1.10800E-02 | -1.46933E-01 | 1.01771E+00 | -7.92091E-01 |
| 19 | 1.15266E-02 | -1.46714E-01 | 1.01749E+00 | -7.92556E-01 |
| 20 | 1.19907E-02 | -1.46543E-01 | 1.01722E+00 | -7.92997E-01 |
| 21 | 1.24653E-02 | -1.46424E-01 | 1.01692E+00 | -7.93405E-01 |
| 22 | 1.29511E-02 | -1.46358E-01 | 1.01657E+00 | -7.93787E-01 |
| 23 | 1.34401E-02 | -1.46345E-01 | 1.01620E+00 | -7.94128E-01 |
| 24 | 1.39278E-02 | -1.46386E-01 | 1.01579E+00 | -7.94426E-01 |
| 25 | 1.44090E-02 | -1.46480E-01 | 1.01536E+00 | -7.94684E-01 |
| 26 | 1.48736E-02 | -1.46625E-01 | 1.01490E+00 | -7.94893E-01 |
| 27 | 1.53313E-02 | -1.46822E-01 | 1.01443E+00 | -7.95053E-01 |
| 28 | 1.57623E-02 | -1.47066E-01 | 1.01395E+00 | -7.95163E-01 |
| 29 | 1.61609E-02 | -1.47356E-01 | 1.01346E+00 | -7.95221E-01 |
| 30 | 1.65408E-02 | -1.47689E-01 | 1.01296E+00 | -7.95227E-01 |
| 31 | 1.69397E-02 | -1.48087E-01 | 1.01223E+00 | -7.95191E-01 |

SECTION NUMBER 6  '7' = 7.7500
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SECTION PROPERTIES

SECTION AREA = 6.4672E-02

LOCATION OF CENTROID
RELATIVE TO STACK AXIS    XBAR = 4.7621E-01    YBAR = -5.7553E-01

SECOND MOMENTS OF AREA
ABOUT CENTROID    IX = 1.3008E-03    IY = 3.6965E-03    IXY = -2.6017E-03

PRINCIPAL SECOND MOMENTS
OF AREA ABOUT CENTROID    IPX = 4.6396E-05 (AT -35.48 DEGREES TO 'X' AXIS)    IPY = 5.5509E-03 (AT -35.48 DEGREES TO 'Y' AXIS)

TORSIONAL CONSTANT = 7.8880E-05

SECTICN COORDINATES

| POINT NO | XS | YS | XF | YP |
|---|---|---|---|---|
| 1 | 1.94440E-02 | -1.51715E-01 | 1.18877E-02 | -1.57955E-01 |
| 2 | 3.22602E-02 | -1.65131E-01 | 2.21093E-02 | -1.73666E-01 |
| 3 | 5.06303E-02 | -1.93301E-01 | 4.42831E-02 | -2.06579E-01 |
| 4 | 9.67797E-02 | -2.20825E-01 | 6.67086E-02 | -2.38623E-01 |
| 5 | 1.13593E-01 | -2.47683E-01 | 8.93909E-02 | -2.69813E-01 |
| 6 | 1.43242E-01 | -2.73887E-01 | 1.12338E-01 | -3.00141E-01 |
| 7 | 1.66852E-01 | -2.93432E-01 | 1.35518E-01 | -3.29607E-01 |
| 8 | 1.93110E-01 | -3.24324E-01 | 1.58927E-01 | -3.58212E-01 |
| 9 | 2.19161E-01 | -3.49569E-01 | 1.82557E-01 | -3.85955E-01 |
| 10 | 2.45014E-01 | -3.72170E-01 | 2.06397E-01 | -4.12836E-01 |
| 11 | 2.70673E-01 | -3.95131E-01 | 2.30437E-01 | -4.38859E-01 |
| 12 | 2.96168E-01 | -4.17463E-01 | 2.54668E-01 | -4.64027E-01 |
| 13 | 3.21433E-01 | -4.39170E-01 | 2.79081E-01 | -4.88343E-01 |
| 14 | 3.46665E-01 | -4.60262E-01 | 3.03670E-01 | -5.11810E-01 |
| 15 | 3.71657E-01 | -4.80747E-01 | 3.28425E-01 | -5.34431E-01 |
| 16 | 3.96600E-01 | -5.00638E-01 | 3.53338E-01 | -5.56214E-01 |
| 17 | 4.21397E-01 | -5.19946E-01 | 3.78403E-01 | -5.77162E-01 |
| 18 | 4.46071E-01 | -5.38682E-01 | 4.03611E-01 | -5.97284E-01 |
| 19 | 4.70665E-01 | -5.56860E-01 | 4.28955E-01 | -6.16584E-01 |
| 20 | 4.95193E-01 | -5.74494E-01 | 4.54427E-01 | -6.35073E-01 |
| 21 | 5.19634E-01 | -5.91600E-01 | 4.80020E-01 | -6.52761E-01 |
| 22 | 5.44033E-01 | -6.08194E-01 | 5.05725E-01 | -6.69656E-01 |
| 23 | 5.68390E-01 | -6.24291E-01 | 5.31537E-01 | -6.85769E-01 |
| 24 | 5.92718E-01 | -6.39909E-01 | 5.57446E-01 | -7.01115E-01 |
| 25 | 6.17029E-01 | -6.55095E-01 | 5.83447E-01 | -7.15707E-01 |
| 26 | 6.41331E-01 | -6.69737E-01 | 6.05532E-01 | -7.29560E-01 |
| 27 | 6.65636E-01 | -6.84085E-01 | 6.35693E-01 | -7.42691E-01 |
| 28 | 6.89948E-01 | -6.97979E-01 | 6.61922E-01 | -7.55115E-01 |
| 29 | 7.14276E-01 | -7.11492E-01 | 6.88206E-01 | -7.66862E-01 |
| 30 | 7.38621E-01 | -7.24643E-01 | 7.14534E-01 | -7.77941E-01 |
| 31 | 7.62990E-01 | -7.37452E-01 | 7.40897E-01 | -7.88378E-01 |
| 32 | 7.87397E-01 | -7.49940E-01 | 7.67285E-01 | -7.98195E-01 |
| 33 | 8.11914E-01 | -7.62129E-01 | 7.93691E-01 | -8.07415E-01 |
| 34 | 9.36275E-01 | -7.74041E-01 | 8.20108E-01 | -8.16063E-01 |
| 35 | 9.60771E-01 | -7.85697E-01 | 8.46530E-01 | -8.24164E-01 |
| 36 | 8.85302E-01 | -7.97122E-01 | 8.72955E-01 | -8.31744E-01 |
| 37 | 9.09869E-01 | -8.08340E-01 | 8.99378E-01 | -8.38828E-01 |
| 38 | 9.34470E-01 | -8.19374E-01 | 9.25799E-01 | -8.45444E-01 |
| 39 | 9.59105E-01 | -8.30251E-01 | 9.52215E-01 | -8.51619E-01 |
| 40 | 9.83756E-01 | -8.40991E-01 | 9.78640E-01 | -8.57385E-01 |
| 41 | 1.00846E+00 | -8.51613E-01 | 1.00504E+00 | -8.62742E-01 |
| 42 | 1.01431E+00 | -8.54390E-01 | 1.01192E+00 | -8.64103E-01 |

| POINT NO | XSEMI | YSEMI | XSEMJ | YSEMJ |
|---|---|---|---|---|
| 1 | 1.18377E-02 | -1.57955E-01 | 1.01491E+00 | -8.54390E-01 |
| 2 | 1.16433E-02 | -1.57575E-01 | 1.01536E+00 | -8.54587E-01 |
| 3 | 1.13846E-02 | -1.57126E-01 | 1.01582E+00 | -8.54815E-01 |
| 4 | 1.11735E-02 | -1.56651E-01 | 1.01626E+00 | -8.55091E-01 |
| 5 | 1.10122E-02 | -1.56156E-01 | 1.01666E+00 | -8.55412E-01 |
| 6 | 1.09026E-02 | -1.55646E-01 | 1.01703E+00 | -8.55776E-01 |
| 7 | 1.08458E-02 | -1.55127E-01 | 1.01736E+00 | -8.56176E-01 |
| 8 | 1.08425E-02 | -1.54606E-01 | 1.01764E+00 | -8.56613E-01 |
| 9 | 1.08528E-02 | -1.54086E-01 | 1.01788E+00 | -8.57077E-01 |

| POINT NO | XSEMI | YSEMI | XSEMJ | YSEMJ |
|---|---|---|---|---|
| 10 | 1.09959E-02 | -1.53575E-01 | 1.01807E+00 | -8.57564E-01 |
| 11 | 1.11339E-02 | -1.53078E-01 | 1.01821E+00 | -8.58071E-01 |
| 12 | 1.13560E-02 | -1.52600E-01 | 1.01829E+00 | -8.58590E-01 |
| 13 | 1.16059E-02 | -1.52140E-01 | 1.01833E+00 | -8.59116E-01 |
| 14 | 1.19068E-02 | -1.51725E-01 | 1.01631E+00 | -8.59644E-01 |
| 15 | 1.22454E-02 | -1.51336E-01 | 1.01823E+00 | -8.60167E-01 |
| 16 | 1.26240E-02 | -1.50986E-01 | 1.01810E+00 | -8.60681E-01 |
| 17 | 1.30352E-02 | -1.50679E-01 | 1.01793E+00 | -8.61178E-01 |
| 18 | 1.34757E-02 | -1.50419E-01 | 1.01770E+00 | -8.61655E-01 |
| 19 | 1.39404E-02 | -1.50207E-01 | 1.01742E+00 | -8.62105E-01 |
| 20 | 1.44242E-02 | -1.50046E-01 | 1.01710E+00 | -8.62524E-01 |
| 21 | 1.49219E-02 | -1.49939E-01 | 1.01674E+00 | -8.62907E-01 |
| 22 | 1.54277E-02 | -1.49886E-01 | 1.01635E+00 | -8.63250E-01 |
| 23 | 1.59362E-02 | -1.49888E-01 | 1.01592E+00 | -8.63545E-01 |
| 24 | 1.64417E-02 | -1.49944E-01 | 1.01546E+00 | -8.63801E-01 |
| 25 | 1.69395E-02 | -1.50055E-01 | 1.01499E+00 | -8.64003E-01 |
| 26 | 1.74213E-02 | -1.50219E-01 | 1.01449E+00 | -8.64153E-01 |
| 27 | 1.78845E-02 | -1.50434E-01 | 1.01398E+00 | -8.64249E-01 |
| 28 | 1.83232E-02 | -1.50698E-01 | 1.01347E+00 | -8.64290E-01 |
| 29 | 1.87324E-02 | -1.51008E-01 | 1.01296E+00 | -8.64276E-01 |
| 30 | 1.91076E-02 | -1.51361E-01 | 1.01245E+00 | -8.64205E-01 |
| 31 | 1.94440E-02 | -1.51715E-01 | 1.01192E+00 | -8.64103E-01 |

SECTION NUMBER 7 'Z' = 8.0000
*******************************

SECTION PROPERTIES

SECTION AREA = 5.7378E-02

| LOCATION OF CENTROID RELATIVE TO STACK AXIS | XBAR = 4.7446E-01 |
| | YBAR = -5.9971E-01 |

| SECOND MOMENTS OF AREA ABOUT CENTROID | IX = 1.9475E-03 |
| | IY = 3.2904E-03 |
| | IXY = -2.4931E-03 |

| PRINCIPAL SECOND MOMENTS OF AREA ABOUT CENTROID | IPX = 3.7005E-05 (AT -37.46 DEGREES TO 'X' AXIS) |
| | IPY = 5.2009E-03 (AT -37.46 DEGREES TO 'Y' AXIS) |

TORSIONAL CONSTANT = 5.2234E-05

SECTION COORDINATES

| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 1 | 2.34222E-02 | -1.60333E-01 | 1.55939E-02 | -1.66422E-01 |
| 2 | 3.59759E-02 | -1.74202E-01 | 2.58450E-02 | -1.82214E-01 |
| 3 | 6.31883E-02 | -2.07763E-01 | 4.03817E-02 | -2.15812E-01 |
| 4 | 9.01960E-02 | -2.32672E-01 | 7.11463E-02 | -2.48543E-01 |
| 5 | 1.16986E-01 | -2.60906E-01 | 9.41498E-02 | -2.80430E-01 |
| 6 | 1.43571E-01 | -2.88477E-01 | 1.17377E-01 | -3.11464E-01 |
| 7 | 1.69956E-01 | -3.15384E-01 | 1.40822E-01 | -3.41648E-01 |
| 8 | 1.96149E-01 | -3.41631E-01 | 1.64474E-01 | -3.70984E-01 |
| 9 | 2.22156E-01 | -3.67224E-01 | 1.88324E-01 | -3.99472E-01 |
| 10 | 2.47985E-01 | -3.92166E-01 | 2.12362E-01 | -4.27116E-01 |
| 11 | 2.73646E-01 | -4.16464E-01 | 2.36580E-01 | -4.53918E-01 |

| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 12 | 2.99147E-01 | -4.40126E-01 | 2.60968E-01 | -4.79886E-01 |
| 13 | 3.24499E-01 | -4.63160E-01 | 2.85518E-01 | -5.05019E-01 |
| 14 | 3.49712E-01 | -4.85575E-01 | 3.10220E-01 | -5.29326E-01 |
| 15 | 3.74734E-01 | -5.07379E-01 | 3.35067E-01 | -5.52818E-01 |
| 16 | 3.99756E-01 | -5.25565E-01 | 3.60049E-01 | -5.75498E-01 |
| 17 | 4.24608E-01 | -5.49205E-01 | 3.85158E-01 | -5.97375E-01 |
| 18 | 4.49358E-01 | -5.69251E-01 | 4.10385E-01 | -6.18459E-01 |
| 19 | 4.74016E-01 | -5.88735E-01 | 4.35722E-01 | -6.38759E-01 |
| 20 | 4.98592E-01 | -6.07673E-01 | 4.61158E-01 | -6.58289E-01 |
| 21 | 5.23095E-01 | -6.26079E-01 | 4.86685E-01 | -6.77059E-01 |
| 22 | 5.47535E-01 | -6.43970E-01 | 5.12295E-01 | -6.95084E-01 |
| 23 | 5.71918E-01 | -6.61362E-01 | 5.37979E-01 | -7.12377E-01 |
| 24 | 5.96255E-01 | -6.73271E-01 | 5.63727E-01 | -7.29956E-01 |
| 25 | 6.20552E-01 | -6.94717E-01 | 5.89531E-01 | -7.44836E-01 |
| 26 | 6.44818E-01 | -7.10717E-01 | 6.15384E-01 | -7.60036E-01 |
| 27 | 6.69058E-01 | -7.26269E-01 | 6.41275E-01 | -7.74575E-01 |
| 28 | 6.93278E-01 | -7.41451E-01 | 6.67196E-01 | -7.88473E-01 |
| 29 | 7.17485E-01 | -7.56221E-01 | 6.93139E-01 | -8.01749E-01 |
| 30 | 7.41683E-01 | -7.70618E-01 | 7.19096E-01 | -8.14423E-01 |
| 31 | 7.65877E-01 | -7.84660E-01 | 7.45059E-01 | -8.26518E-01 |
| 32 | 7.90071E-01 | -7.98368E-01 | 7.71024E-01 | -8.38057E-01 |
| 33 | 8.14269E-01 | -8.11761E-01 | 7.96983E-01 | -8.49061E-01 |
| 34 | 8.38473E-01 | -8.24859E-01 | 8.22934E-01 | -8.59556E-01 |
| 35 | 8.62636E-01 | -8.37685E-01 | 8.48874E-01 | -8.69566E-01 |
| 36 | 8.86910E-01 | -8.50259E-01 | 8.74799E-01 | -8.79116E-01 |
| 37 | 9.11144E-01 | -8.62604E-01 | 9.00710E-01 | -8.88231E-01 |
| 38 | 9.35389E-01 | -8.74742E-01 | 9.26607E-01 | -8.96940E-01 |
| 39 | 9.59644E-01 | -8.86700E-01 | 9.52487E-01 | -9.05267E-01 |
| 40 | 9.83986E-01 | -8.98495E-01 | 9.78365E-01 | -9.13245E-01 |
| 41 | 1.00818E+00 | -9.10145E-01 | 1.00421E+00 | -9.20873E-01 |
| 42 | 1.01517E+00 | -9.13503E-01 | 1.01163E+00 | -9.23035E-01 |

| POINT NO | XSEMI | YSEMI | XSEMJ | YSEMJ |
|---|---|---|---|---|
| 1 | 1.55939E-02 | -1.66422E-01 | 1.01517E+00 | -9.13503E-01 |
| 2 | 1.53357E-02 | -1.66098E-01 | 1.01552E+00 | -9.13671E-01 |
| 3 | 1.51240E-02 | -1.65641E-01 | 1.01599E+00 | -9.13924E-01 |
| 4 | 1.49120E-02 | -1.65160E-01 | 1.01642E+00 | -9.14226E-01 |
| 5 | 1.47519E-02 | -1.64658E-01 | 1.01682E+00 | -9.14574E-01 |
| 6 | 1.46455E-02 | -1.64141E-01 | 1.01718E+00 | -9.14963E-01 |
| 7 | 1.45941E-02 | -1.63616E-01 | 1.01750E+00 | -9.15390E-01 |
| 8 | 1.45933E-02 | -1.63088E-01 | 1.01778E+00 | -9.15850E-01 |
| 9 | 1.46579E-02 | -1.62564E-01 | 1.01800E+00 | -9.16336E-01 |
| 10 | 1.47724E-02 | -1.62049E-01 | 1.01817E+00 | -9.16845E-01 |
| 11 | 1.49403E-02 | -1.61543E-01 | 1.01829E+00 | -9.17365E-01 |
| 12 | 1.51559E-02 | -1.61069E-01 | 1.01835E+00 | -9.17904E-01 |
| 13 | 1.54286E-02 | -1.60615E-01 | 1.01836E+00 | -9.18443E-01 |
| 14 | 1.57434E-02 | -1.60193E-01 | 1.01831E+00 | -9.18987E-01 |
| 15 | 1.61008E-02 | -1.59807E-01 | 1.01820E+00 | -9.19509E-01 |
| 16 | 1.64967E-02 | -1.59461E-01 | 1.01804E+00 | -9.20024E-01 |
| 17 | 1.69266E-02 | -1.59159E-01 | 1.01763E+00 | -9.20519E-01 |
| 18 | 1.73856E-02 | -1.58905E-01 | 1.01757E+00 | -9.20985E-01 |
| 19 | 1.78637E-02 | -1.58702E-01 | 1.01726E+00 | -9.21428E-01 |
| 20 | 1.83702E-02 | -1.58551E-01 | 1.01691E+00 | -9.21831E-01 |
| 21 | 1.88846E-02 | -1.58455E-01 | 1.01652E+00 | -9.22194E-01 |
| 22 | 1.94061E-02 | -1.58435E-01 | 1.01609E+00 | -9.22513E-01 |
| 23 | 1.99287E-02 | -1.58430E-01 | 1.01563E+00 | -9.22782E-01 |

| FOINT NC | XSEMI | YSEMI | XSEMJ | YSEMJ |
|---|---|---|---|---|
| 24 | 2.04460E-02 | -1.54502E-01 | 1.01515E+00 | -9.23003E-01 |
| 25 | 2.09538E-02 | -1.54629E-01 | 1.01465E+00 | -9.23165E-01 |
| 26 | 2.14447E-02 | -1.58809E-01 | 1.01413E+00 | -9.23250E-01 |
| 27 | 2.19137E-02 | -1.59041E-01 | 1.01361E+00 | -9.23335E-01 |
| 28 | 2.23556E-02 | -1.59322E-01 | 1.01308E+00 | -9.23332E-01 |
| 29 | 2.27653E-02 | -1.59649E-01 | 1.01256E+00 | -9.23271E-01 |
| 30 | 2.31341E-02 | -1.60018E-01 | 1.01264E+00 | -9.23155E-01 |
| 31 | 2.34222E-02 | -1.60333E-01 | 1.01163E+00 | -9.23035E-01 |

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            SECTION NUMBER  8   '7' =   5.2500
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SECTION PROPERTIES

| | | |
|---|---|---|
| SECTION AREA | = | 5.3126E-02 |
| LOCATION OF CENTROID | XBAR = | 4.7361E-01 |
| RELATIVE TO STACK AXIS | YBAR = | -6.4101E-01 |
| SECOND MOMENTS OF AREA | IX = | 2.1213E-03 |
| ABOUT CENTROID | IY = | 3.0604E-03 |
| | IXY = | -2.5140E-03 |
| PRINCIPAL SECOND MOMENTS | IPX = | 3.3369E-05 (AT -39.71 DEGREES TO 'X' AXIS) |
| OF AREA ABOUT CENTROID | IFY = | 5.1483E-03 (AT -39.71 DEGREES TO 'Y' AXIS) |
| TORSIONAL CONSTANT | = | 3.8777E-05 |

SECTION COORDINATES

| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 1 | 2.66518E-02 | -1.77318E-01 | 1.88287E-02 | -1.83222E-01 |
| 2 | 3.93445E-02 | -1.91994E-01 | 2.91617E-02 | -1.99572E-01 |
| 3 | 6.64275E-02 | -2.23405E-01 | 5.19354E-02 | -2.34500E-01 |
| 4 | 9.33092E-02 | -2.54151E-01 | 7.49170E-02 | -2.65563E-01 |
| 5 | 1.19979E-01 | -2.84211E-01 | 9.81160E-02 | -3.01784E-01 |
| 6 | 1.46451E-01 | -3.13593E-01 | 1.21518E-01 | -3.34155E-01 |
| 7 | 1.72731E-01 | -3.42299E-01 | 1.45115E-01 | -3.65681E-01 |
| 8 | 1.98827E-01 | -3.70330E-01 | 1.68900E-01 | -3.96364E-01 |
| 9 | 2.24746E-01 | -3.97691E-01 | 1.92864E-01 | -4.26205E-01 |
| 10 | 2.50497E-01 | -4.24385E-01 | 2.16997E-01 | -4.55208E-01 |
| 11 | 2.76038E-01 | -4.50420E-01 | 2.41292E-01 | -4.83376E-01 |
| 12 | 3.01527E-01 | -4.75801E-01 | 2.65739E-01 | -5.10714E-01 |
| 13 | 3.26924E-01 | -5.00536E-01 | 2.90330E-01 | -5.37228E-01 |
| 14 | 3.51936E-01 | -5.24633E-01 | 3.15054E-01 | -5.62925E-01 |
| 15 | 3.77022E-01 | -5.48102E-01 | 3.39904E-01 | -5.87813E-01 |
| 16 | 4.01941E-01 | -5.70953E-01 | 3.64871E-01 | -6.11899E-01 |
| 17 | 4.26751E-01 | -5.93197E-01 | 3.89945E-01 | -6.35194E-01 |
| 18 | 4.51450E-01 | -6.14845E-01 | 4.15117E-01 | -6.57706E-01 |
| 19 | 4.76076E-01 | -6.35911E-01 | 4.40379E-01 | -6.79447E-01 |
| 20 | 5.00508E-01 | -6.56407E-01 | 4.65722E-01 | -7.00428E-01 |
| 21 | 5.25064E-01 | -6.76349E-01 | 4.91137E-01 | -7.20663E-01 |
| 22 | 5.49450E-01 | -6.95750E-01 | 5.16615E-01 | -7.40164E-01 |
| 23 | 5.73775E-01 | -7.14627E-01 | 5.42147E-01 | -7.58946E-01 |
| 24 | 5.98046E-01 | -7.32997E-01 | 5.67726E-01 | -7.77029E-01 |
| 25 | 6.22271E-01 | -7.50876E-01 | 5.93344E-01 | -7.94425E-01 |

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| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 26 | 6.46426E-01 | -7.65282E-01 | 6.18991E-01 | -8.11153E-01 |
| 27 | 6.70607E-01 | -7.85231E-01 | 6.44661E-01 | -8.27232E-01 |
| 28 | 6.94733E-01 | -8.01740E-01 | 6.70348E-01 | -8.42680E-01 |
| 29 | 7.18869E-01 | -8.17825E-01 | 6.96045E-01 | -8.57515E-01 |
| 31 | 7.42571E-01 | -8.33504E-01 | 7.21746E-01 | -8.71755E-01 |
| 32 | 7.67014E-01 | -8.43797E-01 | 7.47448E-01 | -8.85421E-01 |
| 33 | 7.91094E-01 | -8.63721E-01 | 7.73146E-01 | -8.90531E-01 |
| 34 | 8.15175E-01 | -8.79297E-01 | 7.98638E-01 | -9.11110E-01 |
| 35 | 8.39251E-01 | -8.92543E-01 | 8.24520E-01 | -9.23175E-01 |
| 36 | 8.63355E-01 | -9.06482E-01 | 8.50191E-01 | -9.34762E-01 |
| 37 | 8.87459E-01 | -9.20135E-01 | 8.75950E-01 | -9.45883E-01 |
| 38 | 9.11577E-01 | -9.34524E-01 | 9.01497E-01 | -9.56565E-01 |
| 39 | 9.35716E-01 | -9.45673E-01 | 9.27133E-01 | -9.66844E-01 |
| 40 | 9.59851E-01 | -9.53607E-01 | 9.52757E-01 | -9.76740E-01 |
| 41 | 9.83994E-01 | -9.72347E-01 | 9.78344E-01 | -9.86285E-01 |
| 42 | 1.00319E+00 | -9.84909E-01 | 1.00398E+00 | -9.95480E-01 |
|    | 1.01626E+00 | -9.88596E-01 | 1.01147E+00 | -9.98143E-01 |

| POINT NO | XSEMI | YSEMI | XSEMJ | YSEMJ |
|---|---|---|---|---|
| 1 | 1.83237E-02 | -1.83222E-01 | 1.01526E+00 | -9.88596E-01 |
| 2 | 1.86438E-02 | -1.82935E-01 | 1.01557E+00 | -9.88747E-01 |
| 3 | 1.83972E-02 | -1.82469E-01 | 1.01604E+00 | -9.89021E-01 |
| 4 | 1.81317E-02 | -1.81978E-01 | 1.01648E+00 | -9.89345E-01 |
| 5 | 1.80269E-02 | -1.81468E-01 | 1.01688E+00 | -9.89715E-01 |
| 6 | 1.79274E-02 | -1.80943E-01 | 1.01724E+00 | -9.90127E-01 |
| 7 | 1.78044E-02 | -1.80411E-01 | 1.01755E+00 | -9.90577E-01 |
| 8 | 1.76494E-02 | -1.78877E-01 | 1.01782E+00 | -9.91058E-01 |
| 9 | 1.79633E-02 | -1.73343E-01 | 1.01804E+00 | -9.91567E-01 |
| 10 | 1.90522E-02 | -1.78829E-01 | 1.01920E+00 | -9.92099E-01 |
| 11 | 1.82777E-02 | -1.79327E-01 | 1.01831E+00 | -9.92639E-01 |
| 12 | 1.45117E-02 | -1.77847E-01 | 1.01836E+00 | -9.93191E-01 |
| 13 | 1.87034E-02 | -1.77395E-01 | 1.01936E+00 | -9.93745E-01 |
| 14 | 1.91253E-02 | -1.76976E-01 | 1.01829E+00 | -9.94295E-01 |
| 15 | 1.94909E-02 | -1.76504E-01 | 1.01817E+00 | -9.94835E-01 |
| 16 | 1.99175E-02 | -1.76255E-01 | 1.01800E+00 | -9.95357E-01 |
| 17 | 2.01559E-02 | -1.75961E-01 | 1.01777E+00 | -9.95857E-01 |
| 18 | 2.04771E-02 | -1.75717E-01 | 1.01749E+00 | -9.96327E-01 |
| 19 | 2.13274E-02 | -1.75525E-01 | 1.01717E+00 | -9.96764E-01 |
| 20 | 2.18423E-02 | -1.75388E-01 | 1.01680E+00 | -9.97162E-01 |
| 21 | 2.22659E-02 | -1.75306E-01 | 1.01639E+00 | -9.97517E-01 |
| 22 | 2.29011E-02 | -1.75241E-01 | 1.01594E+00 | -9.97823E-01 |
| 23 | 2.34329E-02 | -1.75314E-01 | 1.01547E+00 | -9.98079E-01 |
| 24 | 2.39311E-02 | -1.75401E-01 | 1.01498E+00 | -9.98280E-01 |
| 25 | 2.44737E-02 | -1.75548E-01 | 1.01446E+00 | -9.98425E-01 |
| 26 | 2.49508E-02 | -1.75747E-01 | 1.01393E+00 | -9.98511E-01 |
| 27 | 2.54349E-02 | -1.75998E-01 | 1.01340E+00 | -9.98539E-01 |
| 28 | 2.58754E-02 | -1.76292E-01 | 1.01286E+00 | -9.98507E-01 |
| 29 | 2.62815E-02 | -1.76642E-01 | 1.01234E+00 | -9.98416E-01 |
| 30 | 2.66433E-02 | -1.77029E-01 | 1.01182E+00 | -9.98267E-01 |
| 31 | 2.63316E-02 | -1.77319E-01 | 1.01147E+00 | -9.98143E-01 |

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SECTION PROPERTIES

SECTION AREA = 5.2716E-02

LOCATION OF CENTROID   XBAR = 4.7256E-01
RELATIVE TO STACK AXIS  YBAR = -7.0309E-01

SECOND MOMENTS OF AREA  IX = 2.6970E-03
ABOUT CENTROID          IY = 3.0312E-03
                        IXY = -2.7154E-03

PRINCIPAL SECOND MOMENTS  IPX = 3.5546E-05 (AT -42.19 DEGREES TO 'X' AXIS)
OF AREA ABOUT CENTROID    IPY = 5.4296E-03 (AT -42.19 DEGREES TO 'Y' AXIS)

TORSIONAL CONSTANT = 3.5206E-05

SECTION COORDINATES

| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 1 | 2.86572E-02 | -2.05425E-01 | 2.04023E-02 | -2.11079E-01 |
| 2 | 4.11531E-02 | -2.21313E-01 | 3.08028E-02 | -2.26517E-01 |
| 3 | 6.81514E-02 | -2.55175E-01 | 5.36065E-02 | -2.65617E-01 |
| 4 | 9.50231E-02 | -2.82355E-01 | 7.66098E-02 | -3.01845E-01 |
| 5 | 1.21640E-01 | -3.23028E-01 | 9.98211E-02 | -3.37222E-01 |
| 6 | 1.48056E-01 | -3.52502E-01 | 1.23226E-01 | -3.71742E-01 |
| 7 | 1.74277E-01 | -3.83675E-01 | 1.46820E-01 | -4.05409E-01 |
| 8 | 2.00313E-01 | -4.14050E-01 | 1.70593E-01 | -4.38222E-01 |
| 9 | 2.26173E-01 | -4.43727E-01 | 1.94537E-01 | -4.70184E-01 |
| 10 | 2.51863E-01 | -4.72709E-01 | 2.18645E-01 | -5.01295E-01 |
| 11 | 2.77333E-01 | -5.01001E-01 | 2.42909E-01 | -5.31559E-01 |
| 12 | 3.02771E-01 | -5.29606E-01 | 2.67320E-01 | -5.60978E-01 |
| 13 | 3.28305E-01 | -5.55530E-01 | 2.91869E-01 | -5.89557E-01 |
| 14 | 3.53104E-01 | -5.81779E-01 | 3.16548E-01 | -6.17302E-01 |
| 15 | 3.78076E-01 | -6.07362E-01 | 3.41347E-01 | -6.44218E-01 |
| 16 | 4.02528E-01 | -6.32284E-01 | 3.66258E-01 | -6.70311E-01 |
| 17 | 4.27670E-01 | -6.55556E-01 | 3.91273E-01 | -6.95587E-01 |
| 18 | 4.52390E-01 | -6.80186E-01 | 4.16302E-01 | -7.20055E-01 |
| 19 | 4.76636E-01 | -7.03185E-01 | 4.41577E-01 | -7.43723E-01 |
| 20 | 5.01311E-01 | -7.25565E-01 | 4.66651E-01 | -7.66600E-01 |
| 21 | 5.25631E-01 | -7.47337E-01 | 4.92194E-01 | -7.88696E-01 |
| 22 | 5.50003E-01 | -7.61514E-01 | 5.17599E-01 | -8.10021E-01 |
| 23 | 5.74247E-01 | -7.89110E-01 | 5.43056E-01 | -8.30589E-01 |
| 24 | 5.98439E-01 | -8.09140E-01 | 5.68558E-01 | -8.50412E-01 |
| 25 | 6.22514E-01 | -8.28620E-01 | 5.94099E-01 | -8.69503E-01 |
| 26 | 6.46690E-01 | -8.47564E-01 | 6.19669E-01 | -8.87875E-01 |
| 27 | 6.70256E-01 | -8.65986E-01 | 6.45263E-01 | -9.05555E-01 |
| 28 | 6.94916E-01 | -8.83903E-01 | 6.70875E-01 | -9.22544E-01 |
| 29 | 7.18052E-01 | -9.01329E-01 | 6.96499E-01 | -9.38863E-01 |
| 30 | 7.42430E-01 | -9.19281E-01 | 7.22132E-01 | -9.54526E-01 |
| 31 | 7.66508E-01 | -9.34776E-01 | 7.47770E-01 | -9.69555E-01 |
| 32 | 7.90941E-01 | -9.50831E-01 | 7.73410E-01 | -9.83963E-01 |
| 33 | 8.14987E-01 | -9.65466E-01 | 7.93050E-01 | -9.97772E-01 |
| 34 | 8.39049E-01 | -9.81700E-01 | 8.24685E-01 | -1.01100E+00 |
| 35 | 8.63133E-01 | -9.96554E-01 | 8.50324E-01 | -1.02368E+00 |

| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 36 | 8.87243E-01 | -1.01105E+00 | 8.75957E-01 | -1.03582E+00 |
| 37 | 9.11352E-01 | -1.02521E+00 | 9.01586E-01 | -1.04746E+00 |
| 38 | 9.35552E-01 | -1.03906E+00 | 9.27220E-01 | -1.05862E+00 |
| 39 | 9.59760E-01 | -1.05262E+00 | 9.52849E-01 | -1.06933E+00 |
| 40 | 9.83999E-01 | -1.06591E+00 | 9.78494E-01 | -1.07963E+00 |
| 41 | 1.00828E+00 | -1.07896E+00 | 1.00412E+00 | -1.08951E+00 |
| 42 | 1.01520E+00 | -1.08267E+00 | 1.01139E+00 | -1.09227E+00 |

| POINT NO | XSEMI | YSEMI | XSEMJ | YSEMJ |
|---|---|---|---|---|
| 1 | 2.04023E-02 | -2.11079E-01 | 1.01520E+00 | -1.04267E+00 |
| 2 | 2.02421E-02 | -2.10807E-01 | 1.01547E+00 | -1.05211E+00 |
| 3 | 1.95909E-02 | -2.10328E-01 | 1.01594E+00 | -1.08310E+00 |
| 4 | 1.97923E-02 | -2.03825E-01 | 1.01638E+00 | -1.04343E+00 |
| 5 | 1.96477E-02 | -2.09304E-01 | 1.01678E+00 | -1.06381E+00 |
| 6 | 1.95598E-02 | -2.03771E-01 | 1.01715E+00 | -1.06423E+00 |
| 7 | 1.95291E-02 | -2.08232E-01 | 1.01747E+00 | -1.08465E+00 |
| 8 | 1.95562E-02 | -2.07693E-01 | 1.01774E+00 | -1.08515E+00 |
| 9 | 1.96406E-02 | -2.07161E-01 | 1.01796E+00 | -1.08571E+00 |
| 10 | 1.97814E-02 | -2.06641E-01 | 1.01813E+00 | -1.08625E+00 |
| 11 | 1.99769E-02 | -2.06140E-01 | 1.01824E+00 | -1.08680E+00 |
| 12 | 2.02250E-02 | -2.05663E-01 | 1.01829E+00 | -1.08736E+00 |
| 13 | 2.05227E-02 | -2.05216E-01 | 1.01828E+00 | -1.08792E+00 |
| 14 | 2.08667E-02 | -2.04804E-01 | 1.01822E+00 | -1.08848E+00 |
| 15 | 2.12529E-02 | -2.04431E-01 | 1.01810E+00 | -1.08903E+00 |
| 16 | 2.16768E-02 | -2.04103E-01 | 1.01793E+00 | -1.08956E+00 |
| 17 | 2.21337E-02 | -2.03823E-01 | 1.01770E+00 | -1.09006E+00 |
| 18 | 2.26183E-02 | -2.03594E-01 | 1.01742E+00 | -1.09053E+00 |
| 19 | 2.31249E-02 | -2.03418E-01 | 1.01709E+00 | -1.09097E+00 |
| 20 | 2.36477E-02 | -2.03298E-01 | 1.01672E+00 | -1.09137E+00 |
| 21 | 2.41906E-02 | -2.03236E-01 | 1.01631E+00 | -1.09172E+00 |
| 22 | 2.47176E-02 | -2.03231E-01 | 1.01587E+00 | -1.09203E+00 |
| 23 | 2.52524E-02 | -2.03284E-01 | 1.01539E+00 | -1.09226E+00 |
| 24 | 2.57739E-02 | -2.03394E-01 | 1.01489E+00 | -1.09247E+00 |
| 25 | 2.62910E-02 | -2.03561E-01 | 1.01437E+00 | -1.09261E+00 |
| 26 | 2.67928E-02 | -2.03781E-01 | 1.01384E+00 | -1.09269E+00 |
| 27 | 2.72486E-02 | -2.04053E-01 | 1.01331E+00 | -1.09271E+00 |
| 28 | 2.76830E-02 | -2.04374E-01 | 1.01277E+00 | -1.09266E+00 |
| 29 | 2.80810E-02 | -2.04739E-01 | 1.01224E+00 | -1.09256E+00 |
| 30 | 2.84391E-02 | -2.05145E-01 | 1.01172E+00 | -1.09246E+00 |
| 31 | 2.86572E-02 | -2.05425E-01 | 1.01139E+00 | -1.09227E+00 |

SECTION NUMBER 10   'T' =   8.7500
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SECTION PROPERTIES

| | |
|---|---|
| SECTION AREA | = 5.3838E-02 |

LOCATION OF CENTROID
RELATIVE TO STACK AXIS   XBAR = 4.6662E-01
YBAR = -7.7365E-01

SECOND MOMENTS OF AREA
ABOUT CENTROID   IX = 2.9203E-03
IY = 3.0929E-03
IXY = -2.9631E-03

PRINCIPAL SECOND MOMENTS
OF AREA ABOUT CENTROID   IPX = 4.2195E-05 (AT -44.17 DEGREES TO 'X' AXIS)
IPY = 5.3710E-03 (AT -44.17 DEGREES TO 'Y' AXIS)

TORSIONAL CONSTANT   = 3.5161E-05

SECTION COORDINATES

| POINT NO | XS | YS | XF | YP |
|---|---|---|---|---|
| 1 | 2.75421E-02 | -2.43084E-01 | 1.95779E-02 | -2.48449E-01 |
| 2 | 4.06347E-02 | -2.60543E-01 | 3.00931E-02 | -2.67413E-01 |
| 3 | 5.76872E-02 | -2.97206E-01 | 5.28173E-02 | -3.07180E-01 |
| 4 | 8.49292E-02 | -3.33142E-01 | 7.57479E-02 | -3.46036E-01 |
| 5 | 1.21151E-01 | -3.64320E-01 | 9.88931E-02 | -3.84002E-01 |
| 6 | 1.47570E-01 | -4.02746E-01 | 1.22240E-01 | -4.21068E-01 |
| 7 | 1.73742E-01 | -4.35415E-01 | 1.45762E-01 | -4.57234E-01 |
| 8 | 1.94828E-01 | -4.63325E-01 | 1.69512E-01 | -4.92497E-01 |
| 9 | 2.25646E-01 | -5.01472E-01 | 1.93423E-01 | -5.26857E-01 |
| 10 | 2.51372E-01 | -5.32857E-01 | 2.17508E-01 | -5.60310E-01 |
| 11 | 2.75672E-01 | -5.63482E-01 | 2.41757E-01 | -5.92856E-01 |
| 12 | 3.02278E-01 | -5.93346E-01 | 2.66163E-01 | -5.24498E-01 |
| 13 | 3.27512E-01 | -6.22450E-01 | 2.90717E-01 | -6.55229E-01 |
| 14 | 3.52611E-01 | -6.50301E-01 | 3.15410E-01 | -6.85060E-01 |
| 15 | 3.77534E-01 | -6.78402E-01 | 3.40234E-01 | -7.13989E-01 |
| 16 | 4.02438E-01 | -7.05260E-01 | 3.65179E-01 | -7.42020E-01 |
| 17 | 4.27184E-01 | -7.31382E-01 | 3.90237E-01 | -7.69150E-01 |
| 18 | 4.51427E-01 | -7.56776E-01 | 4.15398E-01 | -7.95410E-01 |
| 19 | 4.76375E-01 | -7.81453E-01 | 4.40653E-01 | -8.20781E-01 |
| 20 | 5.00042E-01 | -8.05424E-01 | 4.65993E-01 | -8.45260E-01 |
| 21 | 5.25223E-01 | -8.29700E-01 | 4.91408E-01 | -3.69916E-01 |
| 22 | 5.49545E-01 | -8.51296E-01 | 5.16889E-01 | -8.91701E-01 |
| 23 | 5.73736E-01 | -8.73226E-01 | 5.42427E-01 | -9.13647E-01 |
| 24 | 5.97996E-01 | -8.95509E-01 | 5.68011E-01 | -9.34767E-01 |
| 25 | 6.22246E-01 | -9.15160E-01 | 5.93632E-01 | -3.55077E-01 |
| 26 | 6.46255E-01 | -9.35197E-01 | 6.19255E-01 | -9.74596E-01 |
| 27 | 6.70332E-01 | -9.54635E-01 | 6.44949E-01 | -3.93339E-01 |
| 28 | 6.94308E-01 | -9.73489E-01 | 6.70631E-01 | -1.01132E+00 |
| 29 | 7.10431E-01 | -9.91777E-01 | 6.96323E-01 | -1.02856E+00 |
| 30 | 7.42479E-01 | -1.00951E+00 | 7.22021E-01 | -1.04507E+00 |
| 31 | 7.66520E-01 | -1.02672E+00 | 7.47722E-01 | -1.06088E+00 |
| 32 | 7.90583E-01 | -1.04341E+00 | 7.73425E-01 | -1.07597E+00 |
| 33 | 8.14669E-01 | -1.05960E+00 | 7.99129E-01 | -1.09046E+00 |
| 34 | 8.36738E-01 | -1.07532E+00 | 8.24836E-01 | -1.10418E+00 |
| 35 | 8.62943E-01 | -1.03059E+00 | 8.50542E-01 | -1.11733E+00 |
| 36 | 8.87134E-01 | -1.10542E+00 | 3.76254E-01 | -1.12938E+00 |
| 37 | 9.11343E-01 | -1.11985E+00 | 9.01972E-01 | -1.14186E+00 |
| 38 | 9.35533E-01 | -1.13390E+00 | 9.27101E-01 | -1.15325E+00 |
| 39 | 9.60322E-01 | -1.14760E+00 | 9.53439E-01 | -1.16420E+00 |
| 40 | 3.84662E-01 | -1.15096E+00 | 9.79209E-01 | -1.17463E+00 |
| 41 | 1.00837E+00 | -1.17401E+00 | 1.00457E+00 | -1.18458E+00 |
| 42 | 1.01551E+00 | -1.17747E+00 | 1.01182E+00 | -1.18719E+00 |

| POINT NO | XSEMI | YSEMI | XSEMJ | YSEMJ |
|---|---|---|---|---|
| 1 | 1.95779E-02 | -2.48449E-01 | 1.01551E+00 | -1.17747E+00 |
| 2 | 1.94301E-02 | -2.49180E-01 | 1.01577E+00 | -1.17761E+00 |
| 3 | 1.91911E-02 | -2.47688E-01 | 1.01624E+00 | -1.17790E+00 |
| 4 | 1.90050E-02 | -2.47174E-01 | 1.01669E+00 | -1.17823E+00 |
| 5 | 1.86735E-02 | -2.46644E-01 | 1.01710E+00 | -1.17661E+00 |
| 6 | 1.87932E-02 | -2.46104E-01 | 1.01747E+00 | -1.17904E+00 |
| 7 | 1.87819E-02 | -2.45560E-01 | 1.01780E+00 | -1.17950E+00 |
| 8 | 1.84223E-02 | -2.45018E-01 | 1.01805E+00 | -1.18000E+00 |
| 9 | 1.85197E-02 | -2.44485E-01 | 1.01831E+00 | -1.18052E+00 |

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| POINT NC | XSEMI | YSEMI | XSEMJ | YSEMJ |
|---|---|---|---|---|
| 10 | 1.95731E-02 | -2.43967E-01 | 1.01848E+00 | -1.18107E+00 |
| 11 | 1.92808E-02 | -2.43470E-01 | 1.01860E+00 | -1.18162E+00 |
| 12 | 1.95432E-02 | -2.42999E-01 | 1.01866E+00 | -1.18219E+00 |
| 13 | 1.98435E-02 | -2.42560E-01 | 1.01866E+00 | -1.18276E+00 |
| 14 | 2.02023E-02 | -2.42159E-01 | 1.01861E+00 | -1.18332E+00 |
| 15 | 2.05937E-02 | -2.41799E-01 | 1.01850E+00 | -1.18388E+00 |
| 16 | 2.10290E-02 | -2.41485E-01 | 1.01833E+00 | -1.18441E+00 |
| 17 | 2.14909E-02 | -2.41220E-01 | 1.01811E+00 | -1.18492E+00 |
| 18 | 2.19800E-02 | -2.41006E-01 | 1.01783E+00 | -1.18540E+00 |
| 19 | 2.24937E-02 | -2.40851E-01 | 1.01751E+00 | -1.18585E+00 |
| 20 | 2.30142E-02 | -2.40751E-01 | 1.01714E+00 | -1.18625E+00 |
| 21 | 2.34472E-02 | -2.40709E-01 | 1.01674E+00 | -1.18661E+00 |
| 22 | 2.40827E-02 | -2.40726E-01 | 1.01629E+00 | -1.18692E+00 |
| 23 | 2.46145E-02 | -2.40800E-01 | 1.01582E+00 | -1.18717E+00 |
| 24 | 2.51364E-02 | -2.40933E-01 | 1.01532E+00 | -1.18737E+00 |
| 25 | 2.56423F-02 | -2.41121E-01 | 1.01481E+00 | -1.18751E+00 |
| 26 | 2.61265E-02 | -2.41362E-01 | 1.01428E+00 | -1.18760E+00 |
| 27 | 2.65933E-02 | -2.41655E-01 | 1.01374E+00 | -1.18761E+00 |
| 28 | 2.70374E-02 | -2.41996E-01 | 1.01320E+00 | -1.18757E+00 |
| 29 | 2.73940E-02 | -2.42380E-01 | 1.01267E+00 | -1.18747E+00 |
| 30 | 2.77325C-02 | -2.42803E-01 | 1.01215E+00 | -1.18731E+00 |
| 31 | 2.79421E-02 | -2.43084E-01 | 1.01182E+00 | -1.18715E+00 |

SECTION NUMBER 11    'Z' =    9.0000
●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●

SECTION PROPERTIES

SECTION AREA                                    =    5.5179E-02

LOCATION OF CENTROID              XBAR  =    4.6112E-01
RELATIVE TO STACK AXIS            YBAR  =   -5.4474E-01

SECOND MOMENTS OF AREA            IX    =    3.3658E-03
ABOUT CENTROID                    IY    =    3.1704E-03
                                  IXY   =   -3.2179E-03

PRINCIPAL SECOND MOMENTS          IPX   =    6.4875E-03  (AT  44.13 DEGREES TO 'X' AXIS)
OF AREA ABOUT CENTROID            IPY   =    4.8726E-05  (AT  44.13 DEGREES TO 'Y' AXIS)

TORSIONAL CONSTANT                              =    3.5698E-05

SECTION COORDINATES

| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 1 | 2.65201F-02 | -2.84231E-01 | 1.80709E-02 | -2.89335E-01 |
| 2 | 3.94714E-02 | -3.03347E-01 | 2.87343E-02 | -3.09943E-01 |
| 3 | 6.65645E-02 | -3.42774E-01 | 5.13684E-02 | -3.52385E-01 |
| 4 | 9.34471E-02 | -3.81408E-01 | 7.42255E-02 | -3.93857E-01 |
| 5 | 1.20113E-01 | -4.13214E-01 | 9.73132E-02 | -4.34375E-01 |
| 6 | 1.46576E-01 | -4.56193E-01 | 1.20618E-01 | -4.73926E-01 |
| 7 | 1.72344E-01 | -4.92341E-01 | 1.44135E-01 | -5.12509E-01 |
| 8 | 1.99527E-01 | -5.27653E-01 | 1.67856E-01 | -5.50118E-01 |
| 9 | 2.24933E-01 | -5.62123E-01 | 1.91772E-01 | -5.86753E-01 |
| 10 | 2.50570E-01 | -5.95751E-01 | 2.15878E-01 | -6.22407E-01 |
| 11 | 2.76147E-01 | -6.28537E-01 | 2.40161E-01 | -6.57708E-01 |

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| POINT NO | XS | YS | XP | YP |
|---|---|---|---|---|
| 12 | 3.01573E-01 | -6.60480E-01 | 2.64614E-01 | -6.90769E-01 |
| 13 | 3.26655E-01 | -6.91582E-01 | 2.89226E-01 | -7.23477E-01 |
| 14 | 3.52001E-01 | -7.21848E-01 | 3.13988E-01 | -7.55206E-01 |
| 15 | 3.77020E-01 | -7.51283E-01 | 3.38890E-01 | -7.85957E-01 |
| 16 | 4.01919E-01 | -7.79892E-01 | 3.63922E-01 | -8.15734E-01 |
| 17 | 4.26706E-01 | -8.07683E-01 | 3.89073E-01 | -8.44540E-01 |
| 18 | 4.51389E-01 | -8.34666E-01 | 4.14333E-01 | -8.72355E-01 |
| 19 | 4.75975E-01 | -8.60854E-01 | 4.39691E-01 | -8.99274E-01 |
| 20 | 5.00473E-01 | -8.86257E-01 | 4.65136E-01 | -9.25217E-01 |
| 21 | 5.24888E-01 | -9.10809E-01 | 4.90658E-01 | -9.50224E-01 |
| 22 | 5.49228E-01 | -9.34766E-01 | 5.16245E-01 | -9.74300E-01 |
| 23 | 5.73500E-01 | -9.57905E-01 | 5.41806E-01 | -9.9743436-0 |
| 24 | 5.97711E-01 | -9.80326F-01 | 5.67570E-01 | -1.01977E+00 |
| 25 | 6.21866E-01 | -1.00205E+00 | 5.93285E-01 | -1.04117E+00 |
| 26 | 6.45990E-01 | -1.02309E+00 | 6.19020E-01 | -1.06172E+00 |
| 27 | 6.70057E-01 | -1.04347E+00 | 6.44766E-01 | -1.08144E+00 |
| 28 | 6.94110E-01 | -1.06320E+00 | 6.70518E-01 | -1.10033E+00 |
| 29 | 7.18152E-01 | -1.08229E+00 | 6.96273E-01 | -1.11842E+00 |
| 30 | 7.42136E-01 | -1.10077E+00 | 7.22029E-01 | -1.13571E+00 |
| 31 | 7.66253E-01 | -1.11865E+00 | 7.47786E-01 | -1.15223E+00 |
| 32 | 7.90335E-01 | -1.13594E+00 | 7.73542E-01 | -1.16799E+00 |
| 33 | 8.14451E-01 | -1.15268E+00 | 7.99302E-01 | -1.18302E+00 |
| 34 | 8.38615E-01 | -1.16886E+00 | 8.25064E-01 | -1.19733E+00 |
| 35 | 8.62830E-01 | -1.18453E+00 | 8.50835E-01 | -1.21094E+00 |
| 36 | 8.87108E-01 | -1.19971E+00 | 8.76617E-01 | -1.22389E+00 |
| 37 | 9.11456E-01 | -1.21441E+00 | 9.02415E-01 | -1.23615E+00 |
| 38 | 9.35879E-01 | -1.22866E+00 | 9.28234E-01 | -1.24780E+00 |
| 39 | 9.60392E-01 | -1.24249E+00 | 9.54075E-01 | -1.25899E+00 |
| 40 | 9.84975E-01 | -1.25592E+00 | 9.79964E-01 | -1.26956E+00 |
| 41 | 1.00368E+00 | -1.26897E+00 | 1.00585E+00 | -1.27950E+00 |
| 42 | 1.01585E+00 | -1.27220E+00 | 1.01228E+00 | -1.28202E+00 |

| POINT NO | XSEMI | YSEMI | XSEMJ | YSEMJ |
|---|---|---|---|---|
| 1 | 1.80709E-02 | -2.89335E-01 | 1.01585E+00 | -1.27220E+00 |
| 2 | 1.79239E-02 | -2.89065E-01 | 1.01610E+00 | -1.27233E+00 |
| 3 | 1.77074E-02 | -2.88563E-01 | 1.01658E+00 | -1.27262E+00 |
| 4 | 1.75341E-02 | -2.88039E-01 | 1.01703E+00 | -1.27295E+00 |
| 5 | 1.74159E-02 | -2.87501E-01 | 1.01745E+00 | -1.27334E+00 |
| 6 | 1.73544E-02 | -2.86955E-01 | 1.01783E+00 | -1.27376E+00 |
| 7 | 1.73500E-02 | -2.86407E-01 | 1.01816E+00 | -1.27423E+00 |
| 8 | 1.74030E-02 | -2.85863E-01 | 1.01845E+00 | -1.27473E+00 |
| 9 | 1.75128E-02 | -2.85329E-01 | 1.01868E+00 | -1.27526E+00 |
| 10 | 1.76779E-02 | -2.84813E-01 | 1.01887E+00 | -1.27581E+00 |
| 11 | 1.78966E-02 | -2.84319E-01 | 1.01899E+00 | -1.27637E+00 |
| 12 | 1.81662E-02 | -2.83854E-01 | 1.01906E+00 | -1.27694E+00 |
| 13 | 1.84838E-02 | -2.83423E-01 | 1.01907E+00 | -1.27752E+00 |
| 14 | 1.88455E-02 | -2.83031E-01 | 1.01903E+00 | -1.27809E+00 |
| 15 | 1.92472E-02 | -2.82683E-01 | 1.01892E+00 | -1.27865E+00 |
| 16 | 1.96842E-02 | -2.82381E-01 | 1.01876E+00 | -1.27919E+00 |
| 17 | 2.01516E-02 | -2.82131E-01 | 1.01854E+00 | -1.27971E+00 |
| 18 | 2.06438E-02 | -2.81935E-01 | 1.01828E+00 | -1.28019E+00 |
| 19 | 2.11551E-02 | -2.81795E-01 | 1.01796E+00 | -1.28064E+00 |
| 20 | 2.16796E-02 | -2.81713E-01 | 1.01760E+00 | -1.28105E+00 |
| 21 | 2.22113E-02 | -2.81689E-01 | 1.01719E+00 | -1.28142E+00 |
| 22 | 2.27440E-02 | -2.81725E-01 | 1.01675E+00 | -1.28173E+00 |
| 23 | 2.32715E-02 | -2.81819E-01 | 1.01628E+00 | -1.28199E+00 |

| POINT NO | XSEMI | YSEMI | XSEMJ | YSEMJ |
|---|---|---|---|---|
| 24 | 2.37876E-02 | -2.81970E-01 | 1.01579E+00 | -1.28220E+00 |
| 25 | 2.42865E-02 | -2.82170E-01 | 1.01527E+00 | -1.28234E+00 |
| 26 | 2.47622E-02 | -2.82439E-01 | 1.01474E+00 | -1.28242E+00 |
| 27 | 2.52094E-02 | -2.82750E-01 | 1.01420E+00 | -1.28245E+00 |
| 28 | 2.56228E-02 | -2.83108E-01 | 1.01366E+00 | -1.28241E+00 |
| 29 | 2.59976E-02 | -2.83508E-01 | 1.01313E+00 | -1.28230E+00 |
| 30 | 2.63294E-02 | -2.83947E-01 | 1.01260E+00 | -1.28214E+00 |
| 31 | 2.65201E-02 | -2.84231E-01 | 1.01228E+00 | -1.28202E+00 |
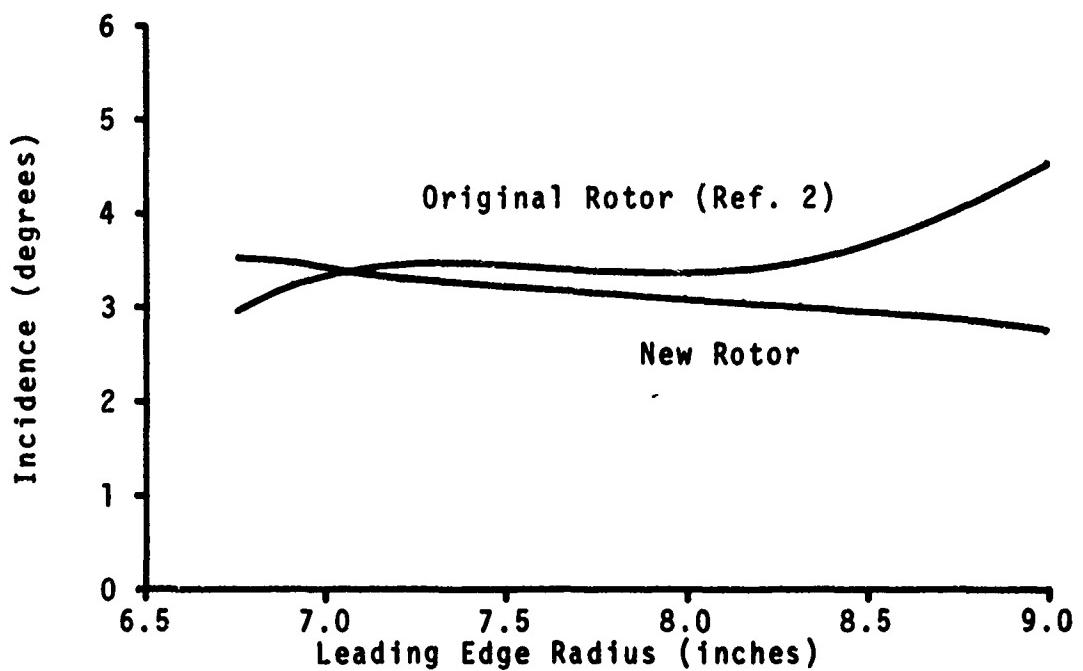
Figure 1.   Radial Distribution of Rotor Incidence Angle
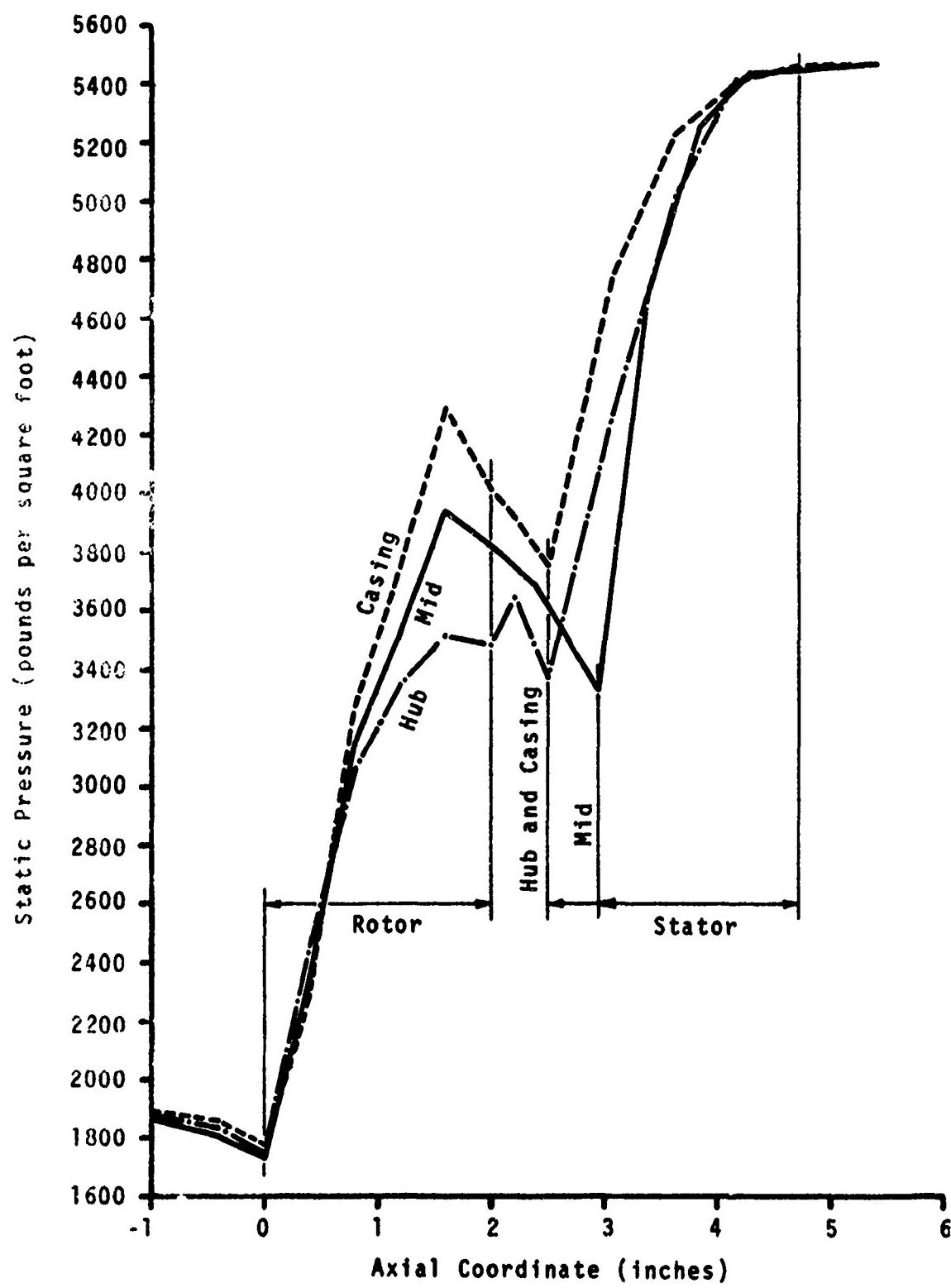
Figure 2. Meridional Static Pressure Distributions
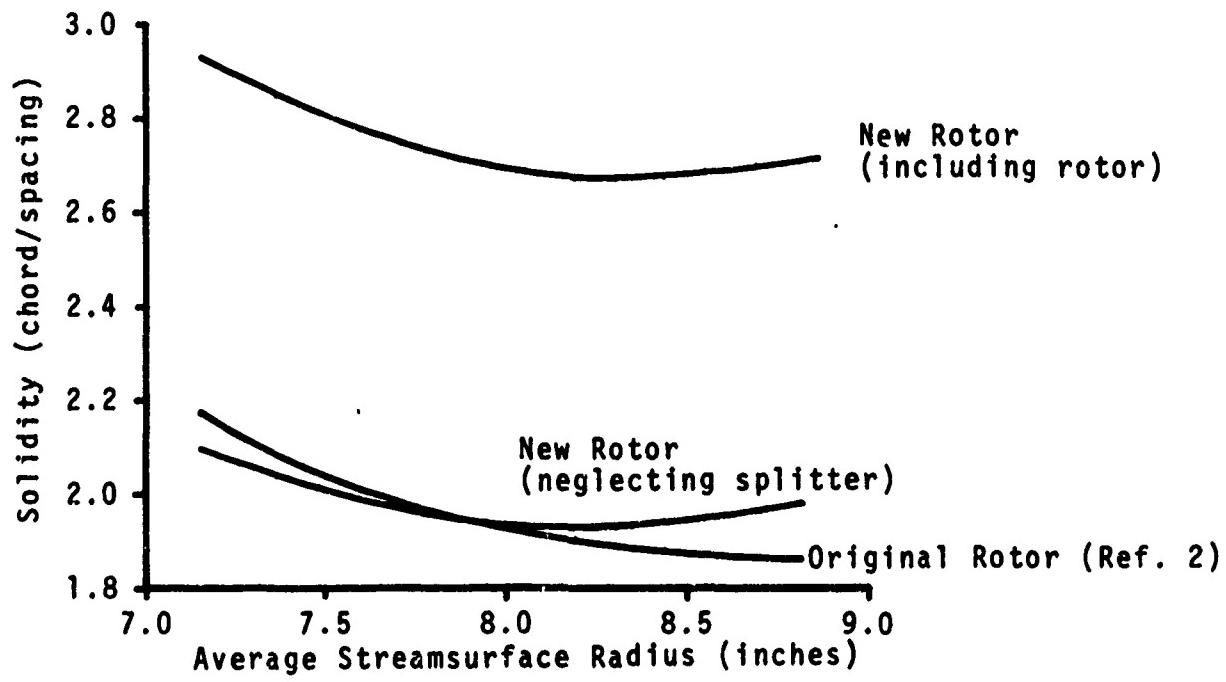
Figure 3. Radial Distribution of Rotor Solidity
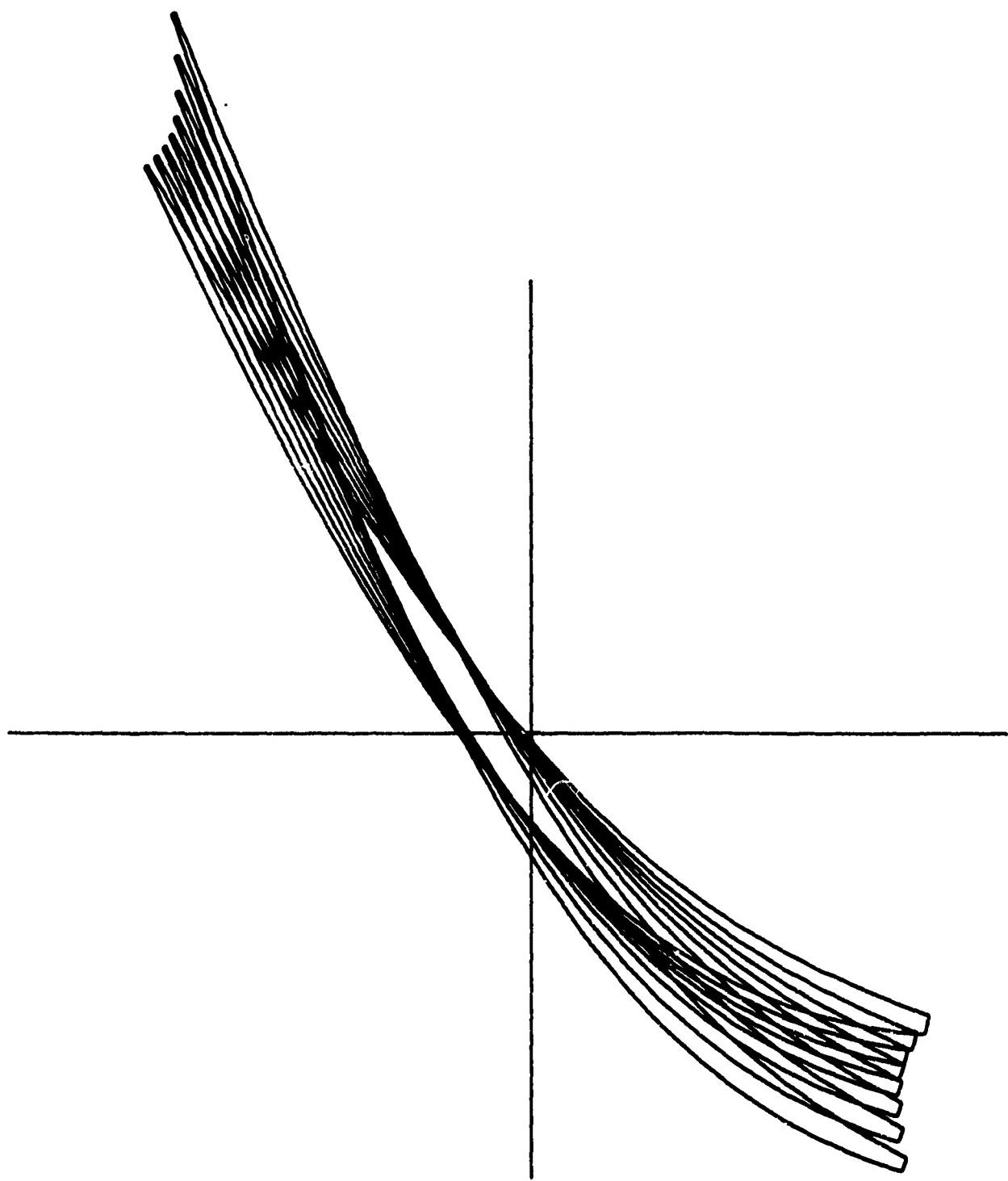
Figure 4. Superimposed Plots of Principal
Blade Streamsurface Sections

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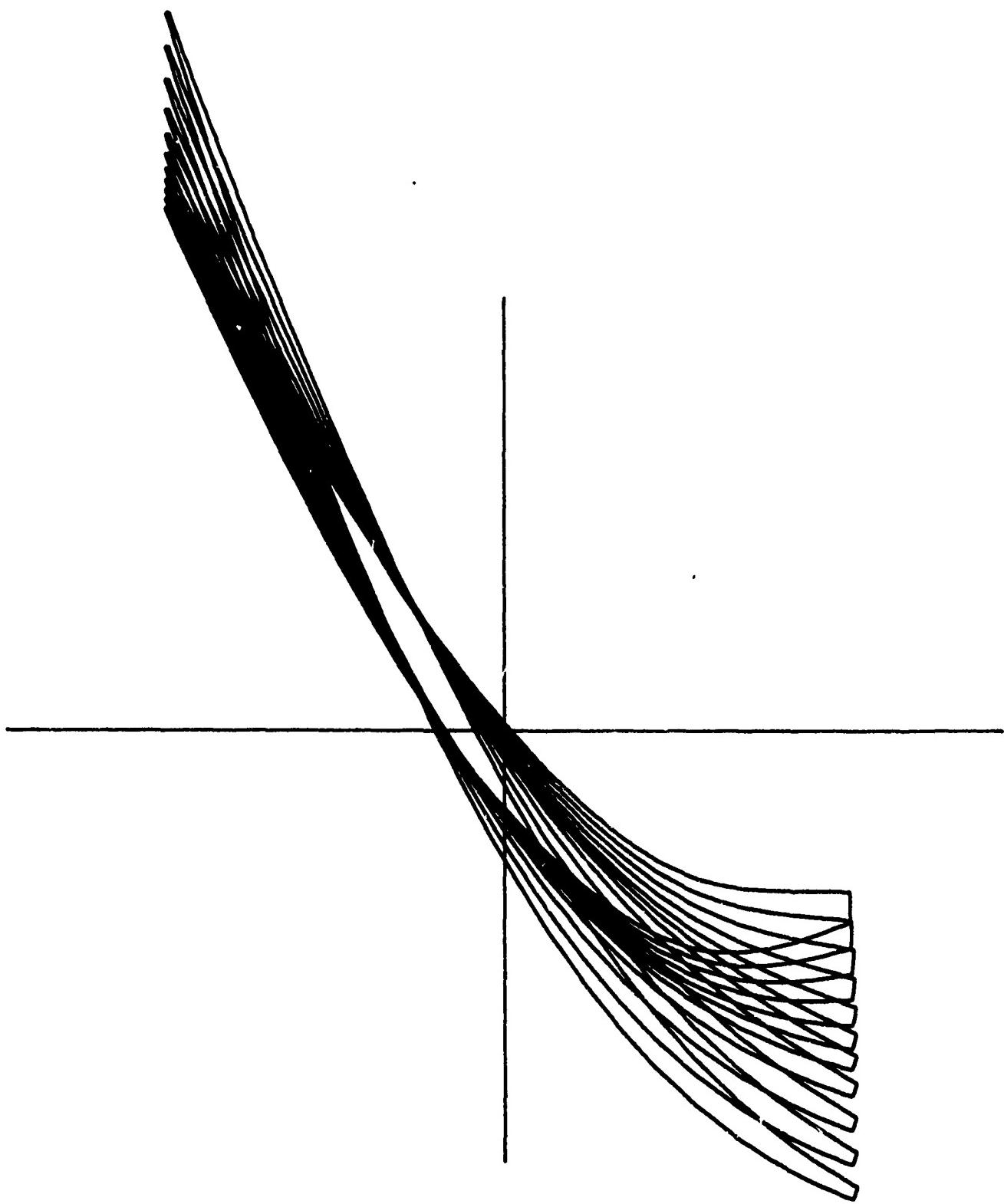
Figure 5. Superimposed Plots of Principal Blade
Cartesian (Manufacturing) Sections

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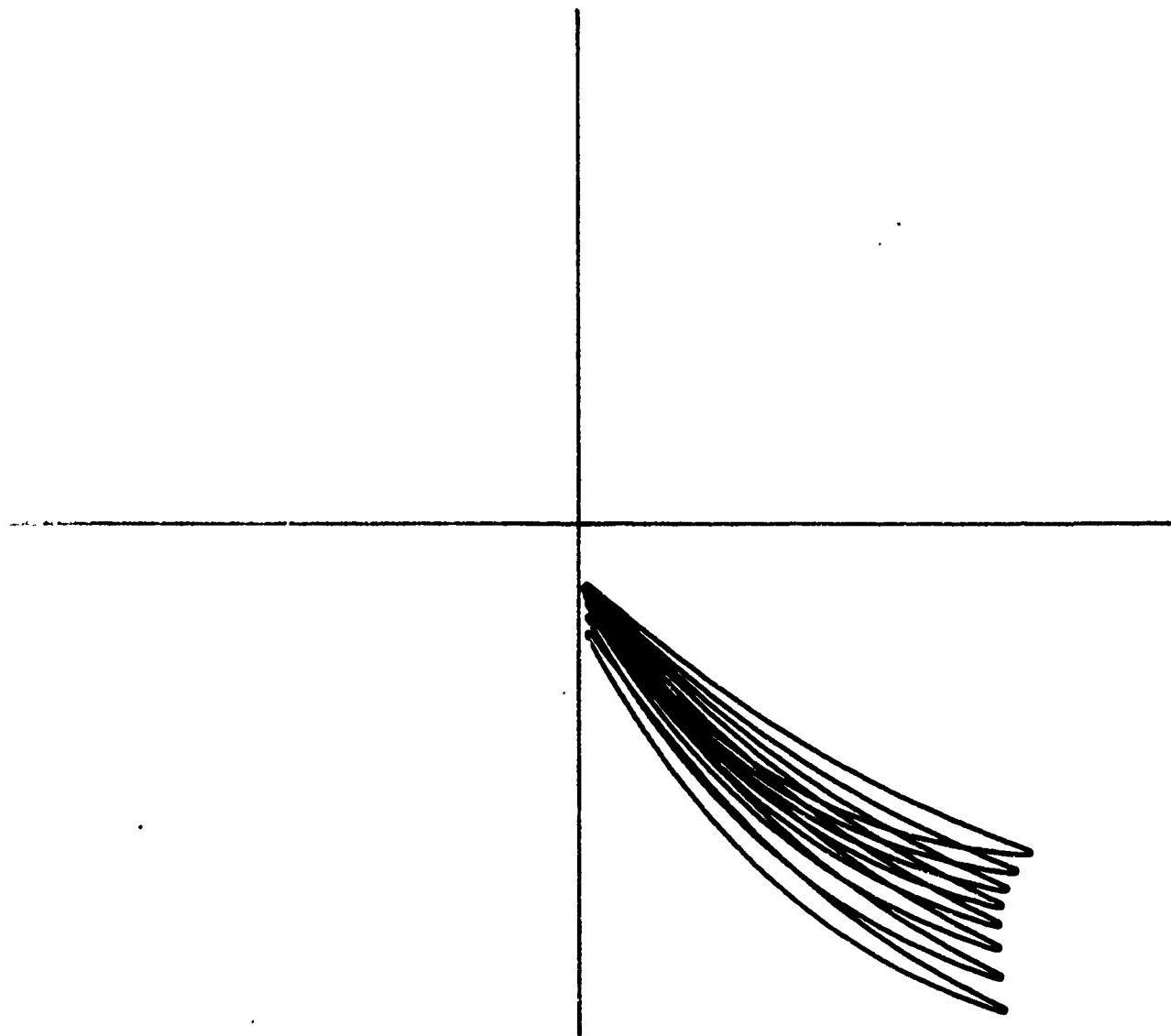
Figure 6.   Superimposed Plots of Splitter
            Vane Streamsurface Sections
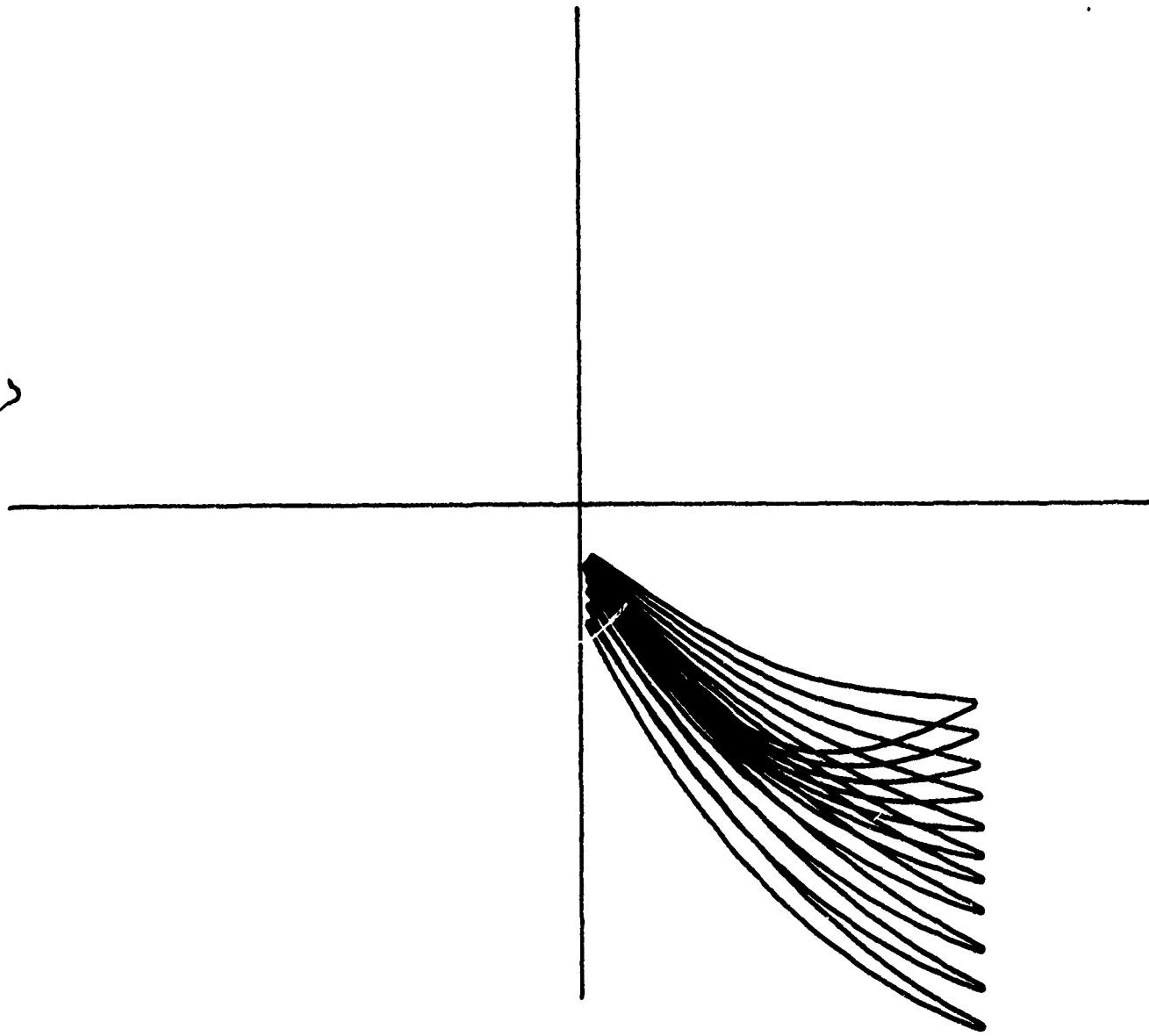
Figure 7. Superimposed Plots of Splitter Vane
Cartesian (Manufacturing) Sections

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## TABLE I

## ROTOR HUB FLOWPATH COORDINATES

| x | r |
|-----|-------|
| 0 | 6.732 |
| .1 | 6.768 |
| .2 | 6.804 |
| .3 | 6.841 |
| .4 | 6.880 |
| .5 | 6.922 |
| .6 | 6.967 |
| .7 | 7.014 |
| .8 | 7.060 |
| .9 | 7.106 |
| 1.0 | 7.152 |
| 1.1 | 7.197 |
| 1.2 | 7.243 |
| 1.3 | 7.291 |
| 1.4 | 7.337 |
| 1.5 | 7.382 |
| 1.6 | 7.423 |
| 1.7 | 7.459 |
| 1.8 | 7.489 |
| 1.9 | 7.514 |
| 2.0 | 7.532 |

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1. Wennerstrom, A. J., Frost, G. R., and DeRose, R. D., "Test of an Axial Compressor Stage Designed for a Total Pressure Ratio of 3 to 1," Aerospace Research Laboratories, Wright-Patterson AFB, Ohio, ARL TR 74-0001, January 1974. (AD 778 844)

2. Wennerstrom, A. J. and Hearsey, R. M., "The Design of an Axial Compressor Stage for a Total Pressure Ratio of 3 to 1," Aerospace Research Laboratories, Wright-Patterson AFB, Ohio, ARL TR 71-0061, AD 727001, March 1971.

3. Frost, G. R., Hearsey, R. M., and Wennerstrom, A. J., "A Computer Program for the Specification of Axial Compressor Airfoils," Aerospace Research Laboratories, Wright-Patterson AFB, Ohio, ARL TR 72-0171, AD 756879, December 1972.

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